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ROYAL BOTANIC GARDENS, KEW

LXV.—THE ARBORESCENT SENECIOS OF MOUNT ELGON. A. D. COTTON.

INTRODUCTION.

Recent studies of the arborescent Senecios have shown clearly not only that there are several distinct species on each of the high mountain masses of East and Central Africa, but also that these species occur in zones and show, as might be expected, certain morphological features of ecological significance. The most obvious feature is to be found in the leaf-structure, the species occurring in the forest or in the subalpine zone above the forest-belt possessing thin leaves devoid of a dense tomentum, whereas those found in the highest or alpine zone possess thick leaves which are protected below by a dense woolly covering. Differences are also found in the anatomical structure of the leaf. These features are clearly seen in the species occurring in Kilimanjaro, the Virunga Mountains and Ruwenzori (see Kew Bull. 1930, 115, 1931, 289, and 1932, 438, respectively). The fact that floral differences accompany those in the leaf precludes the idea of their being merely variations of the same species due to habitat-conditions. As will be shown below, a similar state of affairs has now been found to exist on Mt. Elgon, from which mountain one species only has hitherto been described.

Mt. Elgon, as is well known, is an extinct volcano, over 14,000 ft. high and remarkable for the very large crater at the summit. Details of the mountain will be described by Major E. J. Lugard in a paper on the flora, shortly to be published in the *Kew Bulletin*. All, therefore, that need be stated here is that at about 9000 ft. the forest degenerates into open scrub which at about 10,000 ft. passes into subalpine grassland with scattered Ericaceous bushes and suffruticose plants of temperate genera. The true alpine zone commences at about 12,000 ft. and extends to the summit. The crater is saucer-shaped, being tilted in a westerly direction; in its longest diameter it is 8 miles across. It is believed by some authorities to have been in eruption in Pleistocene times,* but it is now clothed with a characteristic alpine vegetation of grasses, species of *Alchemilla*, *Helichrysum*, and other plants, though it

* The late Prof. J. W. Gregory kindly drew my attention to the recent statement by O. H. Odman that "it may be considered established that the history of Mt. Elgon as an active volcano in the eruptive stage was completed in pre-Pleistocene time." (Geol. Foren. Stockholm, Forh. vol. 52, p. 534, 1930.)

contains also much swampy ground and several small lakes. Hail is frequent and snow occurs, but it seldom lies for any time. A luxurious growth of tree *Senecios* flourishes on the slopes of the mountain from about 11,000 ft. and also within the crater itself. For many years Jackson's Peak (13,650 ft.) on the Uganda side of the crater rim was regarded as the highest point, but revised readings show that other peaks exceed it.

HISTORICAL.

Before dealing with the tree *Senecios* which occur on Mt. Elgon a brief summary of the botanical exploration of the mountain may be given. The crater was first crossed by F. J. Jackson and E. Gedge during the Imperial East African Company's expedition in 1890. The following statement by E. G. Ravenstein, in his account of that expedition (1891, 202), provides the first reference to the giant *Senecios*. "A curious tree with straight rough stem and a large leafy top grows abundantly between 11,000 and 13,000 feet." Excellent photographs of the crater and *Senecios* were taken by Gedge, and these plants are also alluded to by Hobley (1897), who made a tour around the crater in 1896.

Although the mountain is on the frontier of Kenya and Uganda it was formerly included in the Central Province of the latter country. It is therefore dealt with in Sir Harry Johnston's well known work "The Uganda Protectorate" published in 1902 (vol. i. chapter 2). Johnston did not reach the crater himself, but he supplies notes on the general mountain flora and reproduces some of the photographs of the crater taken by Gedge. The plants collected during his visit were presented to Kew and the list of identifications was published (Johnston 1902, 326-328). These names are also included in a general list of Uganda plants by C. H. Wright (1902).

In 1913 Rudolf Kmunke ascended the crater from the west side and his plants, which include the first giant *Senecio* collected from Mt. Elgon, are preserved in the Botanical Institute of the University of Vienna. In his book "Quer durch Uganda" several pages are devoted to the vegetation and many excellent photographs of *Senecios* are reproduced, including one (t. 19, fig. 1) which probably depicts the new species described below as *S. Gardneri*.

In October, 1916, Mr. J. D. Snowden, of the Department of Agriculture, Uganda, starting from Mbale and using the route *via* Budadiri (4200 ft.), Butandiga (c. 7000 ft.) and Bulambuli ("Bamboo Camp," c. 9000 ft.), visited Mt. Elgon and ascended Jackson's Peak, the supposed highest point of the crater. His collection, which is preserved at Kew, contains a specimen of the plant subsequently named *S. elgonensis*, but which was determined at the time as *S. Johnstonii*. Some eighteen months later R. A. Dummer, using the same route as Snowden, and fortified with the latter's notes and list of plants, also visited the crater and Jackson's Peak. He published a breezy if perhaps somewhat superficial

account of his trip (1919). The first set of his specimens is at Kew, but duplicates are to be found at Berlin and elsewhere.

In 1920 the Swedish ethnographer, G. Lindblom, accompanied by S. Loven and H. Granvick, visited Uganda and included Mt. Elgon in their explorations. The two small books dealing with this expedition, Lindblom (1921) and Loven (1921), contain excellent photographs of the vegetation of the crater and Plate 44 in the latter work evidently portrays *S. Gardneri*. The material was largely worked out at Berlin, but is preserved at Stockholm. Mr. C. H. Lankester visited the crater and summit in 1921, following the usual track from Uganda. The small collection brought home was presented to Kew and was the subject of a short paper in the *Kew Bulletin* 1922.

In 1922 the brothers R. E. Fries and Th. Fries carried out their botanical expedition to Kenya and in 1923 commenced to publish in the "Notizblatt" of the Berlin Botanic Garden a succession of important papers and revisions on the flora of Mt. Kenya, the Aberdares, and Mt. Elgon, a series which is still being continued. Neither of the Fries brothers, however, actually visited Mt. Elgon, their papers dealing with their own Kenya specimens and the Mt. Elgon specimens collected by the Swedish expedition above referred to. Immediately previous to this, Mildbraed (1922) published a short but interesting account of the Mt. Elgon flora. He gives several extracts from Kmunke's volume and translations from Lindblom's Swedish account. He points out that the Elgon species of arborescent *Senecio*, which had been referred to by previous observers as *S. Johnstonii*, was not that species, and that, judging from photographs, there might be a second species on the mountain, possibly identical with his *S. Friesiorum* from Ruwenzori. Mildbraed gives a list of about 30 specimens collected by Lindblom.

Thore Fries, working at the Berlin herbarium in 1923, came across a duplicate of Dummer's specimens collected in 1918 and described it as *S. elgonensis*, sp. nov. This plant has a moderately thick leaf, but is devoid of a dense woolly covering on the under surface. It is the species which botanists had previously regarded as *S. Johnstonii* and is common between 11,000 and 12,000 ft. altitude.

In the *Pflanzenwelt Afrikas*, Engler (1925, 296-299) gives a valuable summary of our knowledge of the Mt. Elgon flora up to that date, incorporating some of the results of Swedish work and giving a list of species which includes *S. elgonensis* Th. Fries.

In 1929 G. L. R. Hancock, Entomologist, Department of Agriculture, Uganda, and W. W. Soundy made a trip to Mt. Elgon with the object of carrying out entomological investigations. They brought back a small collection of plants, which was presented to Kew, and published an interesting paper (1931) on the fauna and flora. The paper is illustrated with good photographs and contains a useful bibliography. They refer to *S. elgonensis*, though they did not collect specimens (their Plate 5, fig. 2, probably represents *S.*

Gardneri). L. C. C. Liebenberg, late of the Uganda Department of Agriculture, paid a brief visit to the mountain in 1930 and sent a fairly extensive collection to Kew, including a flowering specimen of *S. elgonensis*.

Arborescent *Senecios* from Mt. Elgon, therefore, were represented in European herbaria up to the time when the present investigations commenced (January 1930) by three gatherings of *S. elgonensis* only, namely, those of Snowden, Dummer and Liebenberg. A single other specimen existed in Europe, namely, a portion of a plant collected by Kmunke in 1913, but this was not available for study, being preserved in an exhibition case at the Museum of the Botanical Garden and Institute at Vienna. Dr. E. Janchen, however, has been good enough to make an examination and he reports that the leaves agree with those of *S. elgonensis*. As will be seen below, during the three years since that date more than a dozen gatherings, each consisting of ample material, have reached Kew.

RECENT COLLECTIONS.

In the light of the facts referred to in the Introduction it was reasonable to conclude that, since Mt. Elgon is 14,000 feet high, the uppermost species reported by observers would certainly be distinct from the smooth-leaved *S. elgonensis* occurring at 11,000 feet and that a third species might even be expected to occur. The possibility of a second high-alpine species had, indeed, been pointed out by Lindblom (1921, p. 42), Mildbraed (1922, p. 240) and Thore Fries (1923, p. 228) and the receipt in April 1930 of a leafless flowering shoot, collected by H. M. Gardner, tended to confirm this view and to arouse new interest in the area.

As it was impossible to obtain further information from material in Europe, letters, accompanied by a *questionnaire*, were sent in January, 1931 to various persons in Kenya and Uganda who were interested in the mountain flora, with a request for information and for material, particularly (if it could be found) of a densely-tomentose species from the highest altitudes. The result of these letters has been highly satisfactory and has led, not only to the discovery of two other well-marked new species, but to a much clearer understanding of the distribution of these plants on Mt. Elgon. Mr. H. M. Gardner has taken the greatest interest in the matter and through his help both leaves and flowering material, collected by Mr. E. J. Honoré, Forest Officer, were received in February 1931. The plant proved to be the same as that collected by Mr. Gardner himself the previous year and has been named *S. Gardneri*. In December, 1930, Major E. J. Lugard, who, with his daughter-in-law, Mrs. Cyril Lugard, was making an extensive collection on behalf of Kew, likewise obtained and sent home excellent specimens of both *S. Gardneri* and *S. elgonensis*. At a later date Capt. Cyril Lugard kindly sent a further series of specimens, accompanied by photographs and the subjoined memorandum (slightly edited) which

provides a clear picture of the growth and distribution of both species.

"I left Tanyelel on November 2nd, 1931, and ascended by the Wagishu track to a forestry hut at 8500 ft. Here I left the track, which goes on into Uganda, and branched off to the right. This led upward through the forest, which was mainly *Podocarpus*. At about 9000 ft. a bamboo forest was entered. This was finer than that found at 8300 ft., possibly because it had been less cut.

"The forest belt ended at about 10,000 ft. The turf is here short and tree heaths were plentiful, in many places forming patches of forest. I camped at 10,300 ft. near some scattered flat-topped huts of the Elgoni people. Continuing next morning through similar country I found *Senecio elgonensis* for the first time along a stream at 11,000 ft. No specimens were observed in the forest itself. The tree heaths gradually became scarcer and ended at about 12,800 ft. and the grass became tussocky. *S. elgonensis* was very common and always occurred in wet ground, indeed the whole mountain side about here was saturated with water. No flowers of this species were seen (nor were they during my previous visit in December, 1930) but a fair number of plants showed old flower-stalks. At about 13,000 ft. there were masses of flowers including a white *Helichrysum* and a scrub-like yellow Composite. These made a very fine display of colour.

"I was now on what I believe to be the slopes of Sudek. At approximately 13,300 ft. occurred the first specimens of *S. Gardneri*, growing as a fine grove in very wet ground, and this species extended to the summit. The zones of *S. elgonensis* and *S. Gardneri* just overlap and the two plants were found here growing together, but, except for two stunted individuals noted on the summit of Sudek, 13,300 ft. appeared to be the maximum altitude for *S. elgonensis*. *S. Gardneri* is frequently found in very wet conditions though it also occurs on the edge of rocks and tops of hills. I saw no flowers but noted a few flower-heads in bud last year (December, 1930) on Jackson's Summit at 13,650 ft. Only a very few plants of this species showed old flower-stalks. There were masses of old dead leaves hanging down on the stems of *S. Gardneri* and *S. elgonensis*—in fact the two trees have generally the same habit." Two of Captain Lugard's photographs are reproduced (figs. 3 and 4).*

Several collections have been received during 1932. Captain and Mrs. Cyril Lugard, accompanied by Mrs. D. R. Tweedie, made a further ascent in February and collected both species, the lower one in full flower. They also forwarded specimens of *S. Gardneri* showing its juvenile condition (see p. 472).

*Acknowledgments for permission to reproduce the photographs used in this paper are due to Mr. E. H. Robins of the Public Works Department, Kenya Colony, for photograph No. 1; to Mr. J. C. Rammel, of the Forest Department, Kenya Colony, for No. 2; and to Captain Cyril Lugard for Nos. 3 and 4.

A very interesting gathering was received in March from Mr. G. Fairbairn (Kenya Forest Service) of a species allied to, but distinct from, *S. elgonensis*. This was characterised by a very thin leaf, oblong in form with an almost truncate apex. It is the only gathering of its kind in existence and is described below as *S. amblyophyllus*, sp. nov. (see footnote, p. 474). Another Forest Officer, Mr. R. V. H. Porter, sent a fine series of *S. elgonensis* collected in March 1932.

From the Uganda side of Mt. Elgon material was received of both *S. elgonensis* and *S. Gardneri* collected in August by Mr. A. S. Thomas, of the Department of Agriculture.

The notes on the route followed by Mr. Thomas are of special interest, since the distribution of the flora appears to be somewhat different from that on the usual route from the Kenya side.

The arduous ascent necessary to secure these specimens and to collect data involves considerable time and effort as well as expense, and to all who have helped forward botanical science in the present investigation warmest thanks are due.

TAXONOMY.

The full description of the three species occurring on Mt. Elgon is given below and is followed by a key which will provide for their ready recognition in the field.

1. *Senecio elgonensis* Th. Fries jr. in Svensk Bot. Tidskrift, xvii. 229 (1923).

Stem repeatedly forked, 5 or more metres high, covered above with marcescent foliage and bearing large, terminal rosettes of leaves. *Leaves* thin to medium thickness, elliptical to oblong-elliptical, apex acute to subacute, finely dentate, or almost entire, teeth surmounted with hydathodes; lamina 30-40 cm. long and 15-18 cm. wide; upper surface glabrous when mature; midrib arachnoid-tomentose towards insertion; lateral nerves distinct arising at an acute angle, 2-2.5 cm. apart; under surface apparently glabrous but actually clothed with short silky hairs especially towards apex; midrib barbate-tomentose at base, glabrous when mature; petiole distinct, winged, 5-8 mm. long, 3-4 cm. wide. *Inflorescence* bracteate, thyrsoïd-paniculate, nearly 1 metre high, with flower heads racemously arranged on ascending branches; main axis and branches arachnoid-tomentose; bracts leaf-like, with long, broadly winged base. *Flower heads* subcampanulate, 2 cm. wide and 13-15 mm. long (excluding rays), borne on slender peduncles. *Involucral bracts* 3-seriate; outer 1-seriate, linear, 6-7 mm. long; inner 2-seriate, 13-20, narrowly lanceolate, acute, 12-18 mm. long, 2-4 mm. wide, purplish at base. *Ray flowers* few, ligulate, yellow, tube 8 mm. long, ligule 13-15 mm. long. *Disk flowers* 55-80, tube 8-9 mm. long, cylindrical. *Achenes* strongly ribbed, 6 mm. long. *Pappus* barbed.

PLATE IX



1. *Senecio elgonensis* Th. Fries. In sub-alpine meadows below crater of Mt. Elgon about 12,000 ft. alt. Photo. E. H. Robins.

PLATE X



2. *S. elgonensis* Th. Fries. 10,500 ft. alt. Photo. J. C. Rammell.



3. *S. Gardneri* Cotton, sp. nov. 13,500 ft. alt. An unusually fine example. Photo. Capt. Cyril E. Lugard.



4. *S. Gardneri* Cotton, at 13,300 ft. alt. The white tomentum of the leaves is conspicuous. Photo. Capt. Cyril E. Lugard.

MOUNT ELGON. Jan. 1918, *Dummer* 3382* (type); 1913, *Kmunke* (Mus. Vind.); Oct. 1916, *Snowden* 480; 11,500 ft., April 1930, *Liebenberg* 1609; 12,000 ft., Dec. 1930, *E. J. and Mrs. C. Lugard* 437; 13,000 ft., Nov. 1931, *Capt. and Mrs. C. Lugard* 696; 11,000 ft., Feb. 1932, 699; 11,000 ft., Feb. 1932, *Tweedie* 113 (Nairobi Herb.); 10,500 ft., June (?) 1932, *Porter* 2732; 12,800 ft., Aug. 1932, *Thomas* 628 and 630.

This species is abundant and occurs as a definite zone below *S. Gardneri*, extending, according to recent observations, from 11,000 to 13,000 ft. The older altitudinal records, when the two species were not distinguished, must be accepted with reserve. The almost glabrous leaf and the relatively short, broadly-winged petiole distinguish it at once from the upper species and, when in flower, it is also seen to be distinct in the more slender inflorescence and well-marked ray florets.

S. elgonensis, according to Capt. Cyril Lugard, always occurs on wet ground, a fact which is in accordance with the presence of large hydathodes which line the margin of the leaf. These vary in number in different specimens, and it is probable that their number is correlated with the habitat, as is the case with *S. Cottonii* on Kilimanjaro, where plants growing in dry situations have an almost entire margin, whereas those occurring in wet ground are dentate, the teeth being surmounted with hydathodes.

The altitudinal zone and the wet habitat of *S. elgonensis* are precisely similar to those of *S. Kilimanjari*, and it is interesting to note how the two species, which are obviously allied, have responded in slightly different ways to the conditions of their respective mountains.

2. *Senecio Gardneri* Cotton, sp. nov.

Arbor ramosa, usque 5 m. alta. *Folia* rigide coriacea, elliptica vel elliptico-lanceolata, cordata, petiolata, basim versus dentata; lamina 30-40 cm. longa, 15-18 cm. lata, supra sericeo-pilosa demum glabrescens, infra in plantis juvenilibus pilosa, in maturis dense albolanata, costa villosa-tomentosa superne demum glabrescente; petiolus longus (10-14 cm.), cylindricus, pilosus. *Inflorescentia* 1 m. alta, capitulis dense congestis. *Flores* disci numerosissimi (105-120). Species ab omnibus speciebus sectionis homogamis petiolo longo cylindrico distincta.

Tree, repeatedly forked, up to 5 metres high. *Stem* covered below with furrowed bark and above with remains of old leaves. *Leaves* in large terminal rosettes, bright green, thick, tough, broadly elliptic or elliptic-lanceolate, cordate, dentate or sub-entire towards apex, teeth surmounted by hydathodes, lamina 30-40 cm. long, 15-18 cm.

*There is a possibility that the type specimens collected by Dummer are a mixed gathering. The inflorescence and flower heads correspond to those of the plant found abundantly from 11-13,000 ft. and here accepted as *S. elgonensis* Th. Fries. The leaves in both the Kew and the Berlin specimens are identical and badly damaged, but are somewhat thinner than the normal leaves of *S. elgonensis*.

wide ; upper surface arachnoid-tomentose at first, glabrous when mature, midrib arachnoid at base, lateral nerves distinct, arising almost at a right angle, 1.5-2.5 cm. apart ; lower surface in young plants pilose, in mature plants clothed with a very dense, short, white, persistent tomentum, midrib densely barbate-tomentose, becoming glabrous with age and dark brown or black in colour ; lateral veins very distinct ; petiole distinct, cylindrical, up to 14 cm. long, densely pilose. *Inflorescence* bracteate, paniculate, up to 1 m. high, densely crowded with flower heads, subracemously arranged on short lateral branches ; main axis and branches clothed with very dense, woolly tomentum ; lower bracts leaf-like, with broadly winged base, purple when dried. *Flower heads* homogamous, widely campanulate, 2-2.5 cm. wide, 1.5 cm. long, borne on long peduncles ; flowers yellow. *Involucral bracts* 3-seriate ; outer linear, 15-17 mm. long, 1 mm. wide ; inner 2-seriate, oblong-lanceolate, acute, 15-18 mm. long, 3-5 mm. wide, glabrous, purplish when dry. *Ray flowers* absent. *Disk flowers* hermaphrodite, very numerous, 105-120, tube 9-10 mm. long, cylindrical. *Achenes* 4 mm. long. *Pappus* barbed.

MOUNT ELGON. 13,500-14,000 ft., Feb. 1930, *Gardner* 2269 ; Sudek, 13,800 ft., Jan. 1931, *Honoré* 2520 (type) ; Jackson's Summit, 13,600 ft., Dec. 1930, *E. J. and Mrs. C. Lugard* 438 ; 13,300 ft., Nov. 1931, *Capt. and Mrs. C. Lugard* 697, 698 (young) ; 13,500 ft., Feb. 1932, *Capt. and Mrs. C. Lugard* 700, 701 (young) ; and *Tweedie* 112 ; March (?) 1932, *Fairbairn* 2677 ; 13,500 ft., Aug. 1932, *Thomas* 627.

ILLUSTRATIONS : Kmunke, Quer durch Uganda, t. 19, fig. 1. Loven, Kring Mt. Elgon, t. 44.

S. Gardneri commences at the top of the *S. elgonensis* zone at about 13,000 ft. and extends thence to the highest peaks of the rim of the crater. It is distinguished from *S. elgonensis* by the leaves being densely tomentose below and by possessing a long, cylindrical petiole. The flower heads also differ in being devoid of ray florets.

In the juvenile state the leaf covering is entirely different, as was proved by two interesting gatherings forwarded by Captain and Mrs. Cyril Lugard (Nos. 698 and 701). The specimens were collected from young plants 3-6 ft. high, and showed leaves which were clothed with long silky hairs on the under as well as on the upper surface. Although the leaves were identical in form with those of *S. Gardneri*, there was no development, even on the largest, of the dense short tomentum characteristic of that species. In spite of this striking difference, Capt. Lugard did not regard it as a distinct species but as a juvenile form of *S. Gardneri*. Some eight months after these specimens were collected, Mr. I. R. Dale, an Assistant Conservator of Forests in Kenya Colony, discovered a similar phenomenon in the case of *S. aberdareicus* on the Aberdare Mountains, and sent specimens to Kew accompanied by the following note : " The leaves of the young plants may be glabrous or hairy, and the former condition . . . usually, I think, changes when about 4 feet

high." Capt. Lugard's view has, therefore, been confirmed and is here accepted as correct. These observations in the field are not only of interest for the light they throw on the biology of the plants, but are of great value in the prevention of errors liable to occur in the herbarium.

The general affinity of *S. Gardneri* is with *S. keniodendron* Fries from Mt. Kenya and with *S. Friesiorum* Mildbraed from Ruwenzori, which are the only other species possessing homogamous flowers. They both occur at the highest altitudes and possess tomentose foliage. *S. Gardneri* is more nearly allied to the latter, which is, however, very distinct in the short, broadly-winged petiole of the leaf and its apparently much narrower lamina. The very long petiole of *S. Gardneri* is remarkable in a species growing at extreme altitudes and is indeed not found in any other of the arborescent *Senecios* except *S. Johnstonii*, which occurs at a very much lower level.

S. Gardneri occurs under climatic conditions of extreme contrasts, hot sun alternating with sharp frost at night, and periods of rain alternating with very drying winds. In common with many other species it is found on very wet ground and sometimes actually grows in water. With a soil temperature, however, so little above freezing point, the risk of excessive transpiration is at times very great, and the significance of the dense coating of hairs on the lower surface of the leaf is obvious. On the other hand, in seasons of prolonged rain there is a danger of the leaf-tissues being overcharged with water, hence the presence of large hydathodes on the leaf-margin.

3. *Senecio amblyophyllus* Cotton, sp. nov.

Arbor ramosa. *Folia* tenuia, oblonga vel oblongo-elliptica, cordata, apice rotundata vel fere truncata, dentibus minimis instructa; lamina in speciminibus extantibus 30 cm. longa, 15 cm. lata, nervis lateralibus a costa angulo fere 90° abeuntibus, infra breviter pilosa demum subglabrescens; petiolus brevis, alatus. *Inflorescentia* thyrsoido-paniculata; axis ramique laterales lanati, satis graciles. *Capitula* subturbinate, 1.5-2 cm. lata. *Flores radii* conspicui, ligula lineari-oblonga, 14-16 mm. longa. *Flores disci* haud numerosi (55-70). — *S. elgonensi* affinis sed foliis tenuioribus apice fere truncata differt.

Stem repeatedly forked, — m. high. *Leaves* thin, oblong or oblong-elliptic, cordate, apex rounded or almost truncate, shortly petiolate, finely dentate; lamina in existing specimens 30 cm. long, 15 cm. wide; upper surface pilose at first, glabrous when mature; midrib densely pilose; lateral nerves distinct, arising almost horizontally, 1-2 cm. apart; under-surface thinly and shortly pilose, becoming partly glabrous; midrib densely pilose, especially towards base; petiole long, broadly winged at base, 20 cm. long. *Inflorescence* bracteate, thyrsoid-paniculate, about 1 m. high; main axis and branches somewhat slender, lanate; bracts with broadly winged base. *Flower heads* subturbinate, 1.5-2 cm. wide, 12-13 mm. long (excluding rays). *Involucral bracts* 3-seriate; outer 8-10, linear,

6.7 mm. long, 1 mm. wide ; inner bracts 2-seriate, 13-15, narrowly lanceolate, acute, 12-15 mm. long, 4-5 mm. wide. *Ray flowers* few (11-14), ligulate, yellow, tube 5-6 mm. long, ligule 14-16 mm. long, 3-4 mm. wide. *Disk flowers* about 60 (55-65), tube 8-9 mm. long, cylindrical. *Pappus* barbed.

MOUNT ELGON. On small stream, Kassowai River, site wet and shady, Feb. (?) 1932, *Fairbairn* 2678.

Though *S. amblyophyllus* is known only from a single gathering, the leaves are so remarkably distinct that it appears justifiable to describe it as new.* They differ from those of *S. elgonensis*, amongst which it occurs and to which it is allied, in being much thinner and more oblong in outline with a blunt, almost truncate, apex. The veins, moreover, are closer together and arise almost at a right angle, instead of at an acute angle, from the midrib. The inflorescence resembles that of *S. elgonensis*, but the branches are apparently more slender and the capitula smaller. The ray florets are long and showy and the plant must present a fine sight when in flower.

The species appears to be scarce on the mountain, at all events on the tracks usually used by the Kenya foresters, and nothing can be stated as to the extent of its altitudinal range. When collected it was not recognised as distinct from the common species, and consequently the data supplied as to range and habitat require verification. Being a thin-leaved species it is to be expected that it would form a zone lower than that of *S. elgonensis* and possibly be confined to localities where shade is provided. Further material and observations in the field would be most welcome.

KEY TO MT. ELGON SPECIES.

- (1) Leaf with long cylindrical petiole ; under surface clothed with a dense, short, white tomentum ; flower heads homogamous. Occurs from 13,000 ft. to summit.....1. *S. Gardneri* Cotton.
- (2) Leaf with winged petiole ; under surface when mature glabrous, or nearly so ; flower heads heterogamous.
 - (a) Lamina of leaf thin to of medium thickness, oblong-lanceolate. General from 11,000 to 13,000 ft....2. *S. elgonensis* Th. Fries.
 - (b) Leaf very thin, oblong, apex rounded or almost truncate. At 9000 ft.....3. *S. amblyophyllus* Cotton.

LITERATURE ON THE BOTANY OF MT. ELGON.

DUMMER, R. A.

1919. The vegetation of the Crater and Summit of Mt. Elgon. *Gard. Chron.* lxx. 123, 137-8, 150.

*As this paper was passing through the press a second specimen of *S. amblyophyllus* was sent to Kew by Mr. A. S. Thomas (No. 655). This specimen confirms the decision that the species is distinct from *S. elgonensis* and the notes accompanying it show that it occurs in the bamboo forest zone at 9100 ft. The leaf lamina is stated to be flat and not recurved and the petiole and midrib to be flushed with purple.

ENGLER, A.

1925. Die vegetation der Erde. Die Pflanzenwelt Afrikas, v. pt. 1.

FRIES, TH.

1923. Beiträge zur Kenntniss der Flora v. Kenya, Aberdares and Mt. Elgon. Notizbl. Bot. Gart. Berlin, viii. ix. x.

HANCOCK, G. L. R. and W. W. SOUNDY.

1931. Notes on the Fauna and Flora of . . . Masaba (Mt. Elgon). Journ. E. Africa and Uganda Nat. Hist. Soc. no. 36, 165-183.

HOBLEY, C. W.

1897. Notes on a journey round Mt. Masawa or Elgon. Geogr. Journ. ix. 178-185.

JOHNSTON, H. H.

1902. The Uganda Protectorate, i. ch. 2, The Central Province, 43-84, and list of Mt. Elgon plants, 326-328.

KMUNKE, RUDOLF.

1913. Quer durch Uganda. Berlin.

LANKESTER, C. H.

1922. A short trip on Mt. Elgon, Uganda. Kew Bull. 145-148.

LINDBLOM, G.

1921. I vildmark och nigerbjär. Stockholm.

LOVEN, S. A.

1926. Kring Mt. Elgon. Stockholm.

MILDBRAED, J.

1922. Bemerkungen über die Pflanzenwelt des Elgon. Notizbl. Bot. Gart. Berlin, viii. 237-242.

RAVENSTEIN, E. G.

1891. Messrs. Jackson & Gedge's Journey to Uganda *via* Masailand. Proc. Roy. Geog. Soc. xiii. 193-208.

WRIGHT, C. H.

1902. List of plants occurring in the Uganda Protectorate. See Johnston, H. H., 1902, 329-351.

LXVI.—CONTRIBUTIONS TO THE FLORA OF SIAM.*— ADDITAMENTUM XXXVII.

Psychotria aganosmifolia Craib [Rubiaceae-Psychotrieae]; *P. lanceolariae* Ridl. habitu similis sed ramulis haud fuscis, calyce et corolla maioribus recedit.

Frutex circa 2 m. altus (ex *Kerr*); ramuli graciles, primo angulati, mox teretes, glabri, brunneo-corticati. *Folia* lanceolata vel oblanceolata, apice acute vel subacute acuminata, basi angustato-cuneata, 9-17 cm. longa, 1.5-4.5 cm. lata, chartacea, sicca plus minusve pallide brunnea, pagina utraque glabra, costa supra parum impressa subtus prominente, nervis lateralibus utrinque 9-10 pagina utraque conspicuis bene intra marginem arcuatim iunctis et ibi nervum intramarginalem conspicuum formantibus, nervulis vix conspicuis, margine mox irregulariter recurva, petiolo 0.8-3 cm.

*Continued from *K.B.* 1932, 437.

longo glabro suffulta ; stipulae brunneae, 7 mm. longae, subulato-acuminatae vel pauci-fimbriatae, margine irregulariter denticulatae, cito deciduae. *Inflorescentia* terminalis vel lateralis, subsessilis vel pedunculo communi ad 7 mm. longo suffulta, 1.5–2.5 cm. longa, 1.7–3.5 cm. lata, ramulis lateralibus utrinque 2 brevibus vel ad 1 cm. longis, rhachi cum ramulis breviter facialiter ferrugineo-pubescente, pedicellis brevibus vel subnullis, floribus albis (ex *Kerr*). *Receptaculum* circa 1 mm. longum, glabrum. *Calycis* tubus 0.5 mm. longus, lobi 4, deltoidei vel lanceolato-deltoidei, circa 1.5 mm. longi, glabri. *Corollae* tubus 4.75 mm. longus, extra glaber, intra apice dense pilosus, lobi 4, suboblongi, circa 2 mm. longi et 1.5 mm. lati, glabri. *Filamenta* brevia, antheris 1 mm. longis. *Stylus* bene inclusus.

Patalung, Kao Soi Dao, 600 m., evergreen forest, *Kerr* 19,213.

***Psychotria alata* Craib** [Rubiaceae-Psychotrieae] ; a *P. stipulacea* Wall. stipulis dorso basem versus alatis, haud tantum costatis, recedens.

Frutex circa 1 m. altus (ex *Kerr*) ; ramuli glabri, rubro-brunnei vel fusci, mox teretes, circa 4 mm. diametro. *Folia* oblongo-elliptica, oblongo-oblanceolata, vel oblanceolata, apice acute acuminata, basi cuneata, ad 22 cm. longa et 8 cm. lata, chartacea, sicca brunneo-rubra, subtus parum pallidiora, glabra, costa supra prominula subtus prominente, nervis lateralibus utrinque circa 12 supra conspicuis subtus prominentibus intra marginem anastomosantibus, nervulis paucis pagina utraque conspicuis, petiolo 1–2 cm. longo glabro suffulta ; stipulae mox deciduae, 1–2.2 cm. longae, 0.7–1.3 cm. latae, siccae brunneo-rubrae, glabrae, inferne triangulatum alatae. *Inflorescentia* terminalis, corymbiformis, 5–10 cm. diametro, e basi ramosa vel pedunculo communi 2.5 cm. longo suffulta, pedunculo incluso 6–8.5 cm. longa, pedunculo communi ubi evoluto glabro apice trifurcato, ramulis ad 8 cm. longis puberulis apice trifurcatis, ramulis ultimis brevibus puberulis, pedicellis brevibus vel subnullis puberulis. *Receptaculum* puberulum. *Calycis* tubus 0.75 mm. longus, lobi 5–6, apice rotundati, tubo breviores.

Surat, Klawng Nam Wing, 100 m., evergreen forest, *Kerr* 12,246.

***Psychotria ardisioides* Craib** [Rubiaceae-Psychotrieae] ; probabiliter ex affinitate *P. calocarpae* Kurz a qua caule haud puberulo, foliis crassioribus haud puberulis nervis lateralibus haud prominentibus distinguenda.

Caules 15–42 cm. alti, erecti, glabri, straminei, longitudinaliter striati, ad 4 mm. diametro, lenticellis haud conspicuis. *Folia* oblongo-oblanceolata, oblanceolata, vel interdum elliptico-oblanceolata, apice acute acuminata vel saepius subacuminata, basi cuneata, 6–14.5 cm. longa, 2.5–4.7 cm. lata, chartacea vel rigide chartacea, sicca saepissime grisea, interdum brunnescentia vel lutescentia, pagina utraque glabra, costa pagina utraque saepius prominente, nervis lateralibus utrinque 8–10 pagina utraque conspicuis vel subobscuris, nervulis obscuris, margine mox parum recurva, petiolo

3-10 mm. longo glabro suffulta ; stipulae 5 mm. longae, basi inter se connatae, cito deciduae. *Inflorescentia* terminalis, corymbiformis, ad 3.5 cm. diametro, subsessilis vel pedunculo communi ad 12 mm. longo suffulta, ramulis puberulis vel subglabris, floribus sessilibus. *Receptaculum* glabrum, circa 1 mm. longum. *Calycis* tubus brevis, segmenta deltoidea, circa 0.25 mm. longa, ciliolata. *Corollae* tubus 3 mm. longus, extra glaber, intra apice pilosus, lobi 5, ad 2.5 mm. longi et 1.75 mm. lati, glabri. *Antherae* exsertae.

Kao Kalakiri, 700 m., evergreen forest, *Kerr* 14,948.

***Psychotria brunnescentia* Craib** [Rubiaceae-Psychotrieae]; a *P. angulata* Korth., cui facie subsimilis, stipulis conspicue ferrugineo-ciliatis facile distinguenda.

Frutex circa 0.5 m. altus (ex *Kerr*) ; ramuli primo inconspicue puberuli, compressi, cito glabri, teretes, subolivacei, 3 mm. diametro. *Folia* late lanceolata vel oblongo-oblancoolata, apice acute acuminata vel subacuminata, basi cuneata vel subacuminata, 6.5-10.5 cm. longa, 2-3 cm. lata, coriaceo-chartacea, sicca brunnescentia, pagina utraque glabra, subtus in nervorum axillis saepissime foveolata, costa supra conspicua subtus prominente, nervis lateralibus utrinque circa 9 subtus subconspicuis, nervulis obscuris, petiolo 5-10 mm. longo glabro suffulta ; stipulae deltoideae, circa 5 mm. longae, margine dense ferrugineo-ciliatae, deciduae. *Inflorescentia* terminalis, circa 2 cm. longa, pedunculo communi haud evoluto, ramulis plus minusve puberulis, pedunculis ultimis circa 2 mm. longis flores congestos albos (ex *Kerr*) gerentibus. *Receptaculum* circa 1 mm. longum, glabrum. *Calycis* tubus lobis longior, lobi late deltoidei, 0.5 mm. longi, ciliolati. *Corolla* extra glabra, tubo 1.75 mm. longo, intra apice albo-barbato, lobis 5 oblongis fere 2 mm. longis 1.25 mm. latis glabris. *Antherae* breves, exsertae. *Stylus* distincte exsertus.

Nakawn Tai, 200 m., mixed forest, *Kerr* 5843.

***Psychotria chartacea* Craib** [Rubiaceae-Psychotrieae]; a *P. sarmentosa* Blume foliis tenuioribus, inflorescentia glabra facile distinguenda.

Fruticulus scandens ; ramuli graciles, glabri, primo compressi, fusco-brunnei, albo-lineolati, mox teretes, virides, circa 1.5 mm. diametro. *Folia* elliptica vel late elliptica, apice breviter acuminata, vel cuspidato-acuminata, basi cuneata vel late cuneata, 4.5-7.5 cm. longa, 2-4 cm. lata, chartacea, sicca matura subplumbea, subtus parum pallidiora, glabra, subtus saltem iuventute albo-lineolata, costa supra conspicua vel parum impressa subtus prominente, nervis lateralibus utrinque 6 pagina utraque conspicuis vel subprominulis intra marginem anastomosantibus, nervulis obscuris, petiolo 3-11 mm. longo glabro suffulta ; stipulae ad 3 mm. longae, inferne inter se connatae. *Inflorescentia* terminalis, circa 1 cm. diametro, pedunculo communi ad 1 cm. longo apice bracteis ligulatis 3 mm. longis instructo suffulta, glabra, pedunculis partialibus brevibus ; pedicelli 1-1.5 mm. longi. *Receptaculum* breve. *Calycis* tubus

0.5 mm. longus, lobi breves, irregulares. *Corollae* extra glabrae tubus 2.5 mm. longus, intra supra medium dense annulatim pilosus, lobi 5-6, tubo subaequilongi, glabri. *Filamenta* 1.5 mm. longa, apicem versus corollae tubi inserta, glabra, antheris vix 1 mm. longis. *Discus* conspicuus. *Stylus* 1.5 mm. longus, stigmatibus duobus vix 1 mm. longis. *Fructus* anguste ellipsoideus, 8 mm. longus, 5 mm. diametro, costis circa 14 longitudinalibus instructus.

Satul, Kao Keo Range, 600 m., evergreen forest, *Kerr* 14,504.

***Psychotria ellipsoidea* Craib** [Rubiaceae-Psychotrieae]; a *P. andamanica* Kurz foliis glabris, pedunculo communi evoluto recedens.

Frutex circa 4 m. altus (ex *Kerr*); ramuli, nodis exceptis, glabri, primo compressi, mox teretes, circa 5 mm. diametro, cortice fusco-rubro obtekti. *Folia* elliptica vel oblongo-elliptica, apice breviter subacute acuminata, basi cuneata, 10-17 cm. longa, 3.5-7.3 cm. lata, chartacea, sicca supra fusciscentia, subtus plus minusve brunnescentia, pagina utraque glabra, subtus in nervorum axillis foveolata, costa supra conspicua subtus prominente, nervis lateralibus utrinque 13-15 supra conspicuis subtus prominentibus, nervulis pagina neutra conspicuis, petiolo 1-4 cm. longo glabro supra canaliculato suffulta; stipulae deciduae. *Infructescentia* terminalis vel pseudo-lateralis, corymbosa, pedunculo communi 1.5-2 cm. longo incluso circa 6 cm. longa, 10-12 cm. lata, glabra. *Fructus* ellipsoideus, 8 mm. longus, 6 mm. diametro, glaber, calyce persistente circa 1.25 mm. longo coronatus, pedicello ad 3 mm. longo suffultus, seminibus dorso 5-costatis ventrice planis, albumine ruminato.

Surat, Kao Nawng, 1000-1100 m., common in evergreen forest, *Kerr* 13,264.

***Psychotria fuscescens* Craib** [Rubiaceae-Psychotrieae]; a *P. andamanica* Kurz foliis longius petiolatis subtus glabris vel subglabris, a *P. minutiflora* Ridl. foliis maioribus inter alia distinguenda.

Arbuscula circa 5 m. alta (ex *Kerr*); ramuli glabri, primo fusci, compressi, mox olivacei, teretes, circa 3 mm. diametro. *Folia* elliptica vel oblongo-elliptica, apice acute acuminata vel subacuminata, basi cuneata vel subacuminato-cuneata, 15-23 cm. longa, 5.2-8.5 cm. lata, chartacea, sicca fusciscentia, subtus parum pallidiora, pagina superiore glabra, inferiore ad costam nervosque laterales puberula, mox fere glabra, in nervorum axillis foveolata, costa supra conspicua subtus prominente, nervis lateralibus utrinque 11-12 late arcuatis vel subrectis intra marginem arcuatim iunctis supra conspicuis subtus prominulis, nervulis fere omnibus obscuris, petiolo ad 5 cm. longo glabro suffulta; stipulae ellipticae, 7 mm. longae, dorso glabrae, cito deciduae. *Inflorescentia* terminalis, corymbiformis, pedunculo communi 1-1.5 cm. longo incluso ad 5.5 cm. longa, circa 8 cm. lata, sicca fusca, ramulis longitudinaliter puberulis, bracteis parvis deciduis, floribus sessilibus vel pedicellis

circa 1 mm. longis puberulis suffultis. *Receptaculum* 0.75 mm. longum, puberulum. *Calycis* tubus 0.5 mm. longus, lobis brevibus. *Corolla* extra glabra, tubo 3 mm. longo intra supra medium piloso, lobis 5 circa 1.5 mm. longis et 1 mm. latis glabris. *Stamina* exserta, antheris 1 mm. longis, filamentis glabris antheris paulo longioribus.

Krabi, Lanta, 400 m., evergreen forest, *Kerr* 18,994.

Psychotria Hendersoniana *Craib* [Rubiaceae-Psychotrieae]; a *P. rhinocerate* Blume foliorum paginae inferioris indumento brevi pallido, fructu maiore recedit.

Frutex ramulis pilis brevibus ferrugineis adpressis tectis ad 5 mm. diametro cortice cinereo vel cinnamomeo obtectis. *Folia* oblongo-elliptica, elliptica, oblongo-obovata, vel oblongo-oblancoolata, apice breviter acute acuminata, basi cuneata, 11-25 cm. longa, 4-8.5 cm. lata, rigide chartacea, sicca viridia vel parum fuscescentia, subtus parum pallidiora, pagina superiore glabra, inferiore ad costam breviter pallide setulosa, aliter glabra vel ad nervos laterales hic et illic sparse similiter setulosa, costa supra impressa subtus prominente, nervis lateralibus utrinque 9-12 supra conspicuis subtus prominentibus, rete laxo pagina utraque subconspicuo, margine recurva, petiolo 0.5-2 cm. longo suffulta; stipulae deciduae. *Infructescentia* terminalis, ei *P. rhinocerotis* Blume similis et indumento subsimili tecta. *Fructus* ellipsoideus vel subellipsoideus, 8-9 mm. longus, 6.5-7 mm. diametro, sicco fuscus, ferrugineo-hirsutus; calyx persistens, tubo ad 2 mm. longo, lobis ad 4 mm. longis dorso et margine ferrugineo-hirsutis; semina dorso 4-sulcata.

Bachaw, *Kiah* 24,313.

Psychotria induta *Craib* [Rubiaceae-Psychotrieae]; ab affini *P. minutiflora* Ridl. ramulis, inflorescentia, et foliorum pagina inferiore plus minusve pilosis recedens.

Frutex ad 1.5 m. altus (ex *Kerr*); ramuli subsparse piloso-hirsuti, 2.5 mm. diametro. *Folia* oblongo-elliptica, oblongo-oblancoolata, vel oblancoolata, apice acute acuminata, basi cuneata vel angustato-cuneata, 7.5-18 cm. longa, 2-6.3 cm. lata, chartacea, sicca fuscescentia vel lutescentia, subtus pallidiora, supra ad costam sparse pilosa vel glabra, subtus ad costam nervosque laterales pilosa, aliter sparse pilosa, costa supra conspicua subtus prominente, nervis lateralibus utrinque 8-10 supra conspicuis subtus prominentibus, nervulis tantum paucis pagina utraque plus minusve conspicuis, petiolo 1-3 cm. longo indumento ei ramulorum simili tecto suffulta; stipulae acuminatae, 10 mm. longae, 5 mm. latae, dorso pilosae, deciduae. *Inflorescentia* terminalis, corymbiformis, ex ima basi ramosa, 1.5-3.5 cm. longa, 3-5.5 cm. lata, ramulis subsparse pilosis, floribus subsessilibus vel pedicellis brevibus glabris suffultis, bracteis parvis deciduis. *Receptaculum* 1.25 mm. longum, glabrum. *Calycis* tubus brevis, lobi deltoidei, 0.75 mm. longi. *Corolla* extra glabra, tubo 3 mm. longo intra apicem versus piloso, lobis 5 circa 2.5 mm. longis

et 1.5 mm. latis glabris. *Stamina* exserta, antheris paulo ultra 1 mm. longis, filamentis antheris longioribus.

Satul, Kao Keo Range, 700 m., evergreen forest, *Kerr* 14,565.

Psychotria kratensis Craib [Rubiaceae-Psychotrieae]; a *P. lancolaria* Ridl. foliis subtus puberulis, pedunculo longiore, a *P. calocarpha* Kurz ramulis haud cito glabrescentibus, stipulis brevioribus haud glabris inter alia recedit.

Frutex circa 0.75 m. altus (ex *Kerr*); ramuli graciles, primo dense mox subsparse breviter crispatis pubescentes, rubro-brunnei, fistulosi. *Folia* lanceolata, apicem versus angustata, obtusa, breviter apiculata, basi attenuato-cuneata, interdum parum inaequilateralia, 7-12.5 cm. longa, 1.5-3.2 cm. lata, chartacea, sicca supra viridia vel brunnescentia, subtus pallidiora, brunnescentia, pagina superiore glabra, inferiore ad costam nervosque dense puberula, aliter sparse inconspicue puberula, costa supra saepissime impressa subtus prominente, nervis lateralibus utrinque 9-11 pagina utraque conspicuis vel prominulis bene intra marginem arcuatim iunctis et ibi nervum intramarginalem efficientibus, nervulis paucis subtus plus minusve conspicuis, petiolo 10-18 mm. longo supra canaliculato et subglabro subtus dense breviter crispatis pubescente suffulta; stipulae circa 4 mm. longae, dorso indumento ei ramulorum simili instructae, cito deciduae. *Panicula* terminalis, pedunculo communi 1.5-3 cm. longo suffulta, ad 1.5 cm. longa et lata, ramulis lateralibus utrinque duobus cum pedunculis et pedicellis indumento ei ramulorum simili tectis; flores albi (ex *Kerr*), pedicellis usque ad 2 mm. longis suffulti; bractae minutae, deciduae. *Receptaculum* breve, subglabrum. *Calycis* tubus 0.5 mm. longus, lobi 4, deltoidei, 0.75 mm. longi. *Corollae* tubus 2.5 mm. longus, lobi 4, circa 1.75 mm. longi.

Krat, Kao Kuap, 400 m., evergreen forest, *Kerr* 18,078.

Psychotria lineolata Craib [Rubiaceae-Psychotrieae]; a *P. calocarpha* Kurz inflorescentia multo laxiore recedit.

Frutex circa 1.5 m. altus (ex *Kerr*); ramuli glabri, sicci rubescentes, ad 3 mm. diametro. *Folia* oblongo-elliptica, oblongo-ovata, vel oblongo-lanceolata, apice obtuse acuminata vel subacuminata, basi cuneata vel acuminata, 8-12 cm. longa, 2.8-4.8 cm. lata, chartacea, sicca brunneo-rubra, subtus pallidiora, supra glabra, subtus ad costam nervosque puberula, aliter subconspicue lineolata, costa supra conspicua haud rarius impressa subtus prominente, nervis lateralibus utrinque ad 14 supra conspicuis subtus prominulis patulis vel subpatulis intra marginem arcuatim iunctis et ibi nervum intramarginalem conspicue formantibus, petiolo 1-2.5 cm. longo glabro vel subtus puberulo supra canaliculato suffulta; stipulae 1 cm. longae, bilobatae, lobis longius acuminatis, dorso glabrae, deciduae. *Inflorescentia* terminalis, corymbosa vel subcorymbosa, pedunculo communi 1-2 cm. longo incluso 4-5 cm. longa, 2-4 cm. diametro, pedunculo et ramulis primo ferrugineo-furfuraceis mox

puberulis, pedicellis brevibus vel ad 1.5 mm. longis, bracteis parvis deciduis, floribus albis (ex *Kerr*). *Receptaculum* 1 mm. longum, glabrum. *Calycis* glabri tubus 0.75 mm. longus, lobi 4, circa 1.5 mm. longi, dentibus parvis inter lobos saepe additis. *Corolla* extra glabra, tubo circa 1 mm. longo intra apice albo-barbato, lobis 4 ovato-lanceolatis 1.5 mm. longis vix 1 mm. latis. *Stamina* exserta, filamentis 0.5 mm. longis ad corollae tubi apicem adfixis, antheris 1 mm. longis.

Mé Hawng Sawm, Doi Pêpô, 1000 m., evergreen forest, *Kerr* 6181.

***Psychotria lutescens* Craib** [Rubiaceae-Psychotrieae]; a *P. sarmentosa* Blume foliis crassioribus sicco lutescentibus, inflorescentia sicca fusca haud grisea, calyce conspicue maiore inter alia recedens.

Fruticulus scandens; ramuli glabri, primo compressi, sicci fusci, mox teretes, subvirides, ad 5 mm. diametro. *Folia* elliptica lateve elliptica, apice obtuse acuminata, basi cuneata, 3.5-5.5 cm. longa, 1.2-2.6 cm. lata, coriacea, sicca saepissime plus minusve lutescentia, pagina utraque glabra, costa supra conspicua vel leviter impressa subtus prominente, nervis lateralibus utrinque 6-8 primo obscuris mox pagina utraque conspicuis vel prominulis intra marginem anastomosantibus, nervulis obscuris, margine recurva, petiolo 4-14 mm. longo glabro supra canaliculato suffulta; stipulae 2-3 mm. longae, inferne inter se connatae, deciduae. *Inflorescentia* terminalis, e basi ramosa vel interdum in speciminibus minoribus pedunculo communi ad 1.5 cm. longo suffulta, corymbiformis, 1.5-4 cm. longa, 2.5-6.5 cm. lata, pedunculis sicco fuscis ultimis distincte puberulis; bractee 1.5 mm. longae, deciduae; pedicelli ad 2.5 mm. longi; flores albi (ex *Kerr*). *Receptaculum* breve. *Calycis* tubus 0.5 mm. longus, irregulariter lobulatus vel tantum undulatus. *Corolla* extra glabra; tubus ad 3.5 mm. longus, intra apice dense albo-pilosus; lobi 5, tubo subaequilongi. *Filamenta* usque ad 3 mm. longa, glabra, infra tubi apicem adfixa, antheris 1 mm. longis. *Stylus* cum stigmatibus duobus 5 mm. longus.

Kao Kalakiri, 900 m., evergreen forest, *Kerr* 14,968.

***Psychotria plana* Craib** [Rubiaceae-Psychotrieae]; a *P. stipulacea* Wall. stipulis multo minoribus, foliis subtus in nervorum axillis haud foveolatis distinguenda.

Frutex circa 1.5 m. altus (ex *Kerr*); ramuli glabri, sicco fusco-brunnei, primo compressi, annotini circa 4 mm. diametro. *Folia* oblongo-elliptica vel oblongo-ob lanceolata, apice obtuse subacuminata, basi cuneata lateve cuneata, 11.5-25 cm. longa, 5-7.5 cm. lata, chartacea, sicca subtus rubescentia, pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque 8-10 supra conspicuis subtus prominulis, nervulis tantum paucis pagina utraque conspicuis, petiolo 1.5-5 cm. longo glabro suffulta; stipulae deciduae, circa 7 mm. longae et 4 mm. latae. *Inflorescentia* terminalis, corymbiformis, ad 5 cm. diametro, pedunculo communi ad 2.5 cm. longo incluso ad 5 cm. longa, ramulis

puberulis; pedicelli breves. *Receptaculum* subglabrum. *Calycis* tubus 0.75 mm. longus, lobis variabilibus interdum conspicuis interdum subnullis. *Corolla* extra glabra, tubo 2 mm. longo intra superne dense piloso, lobis 5 oblongis 2.75 mm. longis 1.25 mm. latis glabris. *Stamina* exserta, filamentis paulo ultra 1 mm. longis quam antheris longioribus. *Stylus* exsertus.

Trang, Kao Soi Dao, 500 m., evergreen forest, *Kerr* 19,174.

***Psychotria polita* Craib** [Rubiaceae-Psychotrieae]; ab affini *P. calocarpa* Kurz ramulis foliisque haud puberulis distinguenda.

Frutex circa 1 m. altus (ex *Kerr*); ramuli glabri, primo quadrangulares, sicco sulcati, mox teretes, ad 3.5 mm. diametro, fistulosi, cortice brunneo obtecti, lenticellis parvis inconspicuis. *Folia* saepissime elliptico-obovata, elliptica, vel elliptico-ovata, apice obtuse acuminata, basi cuneata vel subacuminata, 10.5–15 cm. longa, 3.8–6.8 cm. lata, chartacea, sicca plus minusve brunnescentia vel rubescentia, omnino glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque circa 12 supra conspicuis vel subprominulis subtus prominulis vel subprominentibus intra marginem arcuatim iunctis, nervulis paucis subtus conspicuis, margine parum recurva, petiolo 6–15 mm. longo glabro suffulta; stipulae deciduae, circa 4 mm. longae. *Infructescentia* lateralis, pedunculo communi 2–2.5 cm. longo suffulta, partibus omnibus glabra. *Fructus* ruber (ex *Kerr*), circa 7 mm. diametro, calycis segmentis suboblongis 3.5 mm. longis dorso costatis persistentibus coronatus; semina straminea, dorsaliter transverse corrugata, longitudinaliter 3–4-costata, costis vix prominentibus, ventrice concava.

Ranawng, La-un, 20 m., evergreen forest, *Kerr* 16,510.

***Psychotria rutila* Craib** [Rubiaceae-Psychotrieae]; a *P. cambodiana* Pierre ex Pitard inflorescentia sessili facile distinguenda.

Frutex circa 1 m. altus (ex *Kerr*); ramuli pilis ferrugineis divergentibus dense tecti, mox teretes, circa 2 mm. diametro. *Folia* oblanceolata, apice acute acuminata vel subacuminata, basi cuneata, 3.5–8.5 cm. longa, 1.3–2.8 cm. lata, chartacea, sicca ferruginea, subtus parum pallidiora, pagina superiore ferrugineo-hirsuta, inferiore similiter subhirsuta, utraque praesertim inferiore ad costam nervosque dense tecta, costa supra conspicua subtus prominente, nervis lateralibus utrinque 10–12 supra subconspicuis subtus parum prominentibus, nervulis obscuris, margine ciliata, petiolo ad 1 cm. longo indumento ei ramulorum simili tecto suffulta; stipulae deciduae. *Inflorescentia* terminalis, capituliformis, sessilis, bracteis angustis longius hirsutis. *Receptaculum* longe dense adpresse ferrugineo-hirsutum. *Calycis* tubus brevis, segmenta circa 2 mm. longa, dorso pilis longis ferrugineis dense tecta. *Corolla* expansa haud visa, tubo brevi extra glabro intra apice albo-piloso, lobis 5 circa 2.5 mm. longis extra hirsutis intra glabris. *Fructus* ellipsoideus, calyce persistente excluso 5 mm. longus, 4 mm. diametro, pilis longis ferrugineis instructus, seminibus dorso 4-costatis.

Kaw Chang, Klawng Nonsi, under 10 m., light evergreen forest, *Kerr* 9171.

Psychotria Smithiae *Geddes* [Rubiaceae-Psychotrieae]; a *P. nicobarica* Kurz foliis sicco haud rubris, cymis laxioribus recedens.

Fruticulus (ex *Dr. Smith*), ramulis primo pilis paucis ferrugineis instructis compressis mox glabris teretibus. *Folia* oblongo-elliptica, apice subacuta, basi cuneata, 9-14.5 cm. longa, 3.7-5.5 cm. lata, chartacea, sicca supra fuscescentia, subtus brunnescentia, pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque 11-13 supra conspicuis vel prominulis subtus prominentibus, nervulis paucis pagina utraque subconspicuis, margine recurva, petiolo usque ad 2 cm. longo supra canaliculato suffulta; stipulae circa 8 mm. longae, bilobatae, dorso subsparse ferrugineo-hirsutae, cito deciduae. *Inflorescentia* terminalis, corymbiformis, sessilis, circa 4 cm. longa et 6 cm. diametro, pedunculis partialibus ad 2.5 cm. longis plus minusve ferrugineo-subpilosis inflorescentiam condensam circa 7 mm. diametro gerentibus; bractae lanceolatae, saepe lobatae, 4-5 mm. longae, ciliatae; flores albi (ex *Dr. Smith*). *Receptaculum* breve, pilis paucis ferrugineis instructum. *Calycis* tubus 1 mm. longus, lobi 5, deltoidei, fere 1.5 mm. longi, 1 mm. lati, ciliati. *Corollae* tubus circa 2 mm. longus, intra apice albo-barbatus, lobi 5, circa 1.5 mm. longi. *Antherae* exsertae, 1 mm. longae, filamentis brevibus ad corollae tubi apicem adfixis.

Nakawn Sritamarat, Kao Luang, 600 m., *Dr. Eryl Smith* 695.

Psychotria viburnifolia *Craib* [Rubiaceae-Psychotrieae]; a *P. stipulacea* Wall. foliorum nervis lateralibus paucioribus recedens, *P. angulatae* Korth. parum similis sed inflorescentiis partialibus haud capituliformibus distinguenda.

Frutex circa 2 m. altus (ex *Kerr*); ramuli, nodis exceptis, glabri, primo compressi, sicci fusci, mox teretes, cortice brunneo nitido corrugato obtecti. *Folia* oblongo-oblancoolata vel anguste obovata, apice obtuse acuminata, basi cuneata vel subacuminata, 8-13.5 cm. longa, 2.5-5.5 cm. lata, coriaceo-chartacea, sicca saepissime rubescentia, pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque 9-10 supra conspicuis subtus prominulis intra marginem anastomosantibus, nervulis fere omnibus obscuris, petiolo 5-12 mm. longo glabro suffulta; stipulae oblongae, vix 1 cm. longae, ciliatae, dorso inferne conspicue triangulatim costatae, deciduae. *Inflorescentia* terminalis, corymbiformis, pedunculo communi 1-2 cm. longo suffulta, ad 1.5 cm. longa et 3 cm. lata, ramulis lateralibus utrinque 1-2 ad 1 cm. longis cum ramulis ultimis circa 3 mm. longis puberulis, floribus sessilibus vel subsessilibus, bracteis parvis deciduis. *Receptaculum* 1 mm. longum, puberulum vel subglabrum. *Calycis* tubus vix 1 mm. longus, lobi variabiles, interdum conspicui, interdum perbreves. *Corolla* extra glabra, tubo circa 3 mm. longo intra superne piloso, lobis 5-6 tubo

paulo longioribus 1.5 mm. latis glabris. *Stamina* exserta, antheris fere 1.5 mm. longis filamentis subaequilongis. *Stylus* exsertus.

Adang, 400 m., evergreen forest, *Kerr* 14, 151.

Psychotria Winitii Craib [Rubiaceae-Psychotrieae]; a *P. kratense* Craib foliis conspicue maioribus distinguenda.

Fruticulus ad 0.7 m. altus (ex *Winit*); ramuli primo ferrugineo-furfuracei, compressi, mox teretes, ad 4 mm. diametro. *Folia* elliptica vel elliptico-oblongata, rarius oblonga, apice obtusa vel breviter acuminata, basi cuneata, 8-16 cm. longa, 3-7 cm. lata, chartacea, sicca supra fusco-viridia, subtus brunnea, supra glabra, subtus ad costam ferrugineo-furfuracea et ad nervos laterales furfuraceo-puberula, costa supra impressa subtus prominente, nervis lateralibus utrinque 11-14, supra conspicuis subtus prominulis intra marginem conspicue iunctis, nervulis paucis subtus subprominulis, petiolo usque ad 1.5 cm. longo ferrugineo-furfuraceo supra canaliculato suffulta; stipulae circa 5 mm. longae, deciduae. *Inflorescentia* terminalis, 2.5 cm. diametro, pedunculo communi 0.8-2 cm. longo ferrugineo-furfuraceo suffulta; flores albi (ex *Winit*), pedicellis ad 2 mm. longis subglabris suffulti. *Receptaculum* 1 mm. longum, glabrum. *Calycis* tubus 0.75 mm. longus, glaber, lobi 4, oblongo-deltoides vel oblongi, 1.75 mm. longi, 1 mm. lati, glabri. *Corolla* extra glabra, tubo 4 mm. longo intra superne piloso, lobis 4 suboblongis fere 4 mm. longis et 1.5 mm. latis glabris.

Lampang, Mê Yom, Mê Pêng, 150 m., evergreen forest, *Winit* 1845.

Saprosma brunneum Craib [Rubiaceae-Psychotrieae]; *S. pubescenti* Ridl. habitu similis sed calycis segmentis multo longioribus distinctum, a *S. Scortechinii* King et Gamble ramulis iuventute haud glabris recedens.

Frutex circa 3 m. altus (ex *Kerr*); ramuli primo subbrunneo-tomentosi, demum glabri, cortice stramineo obtecti, ad 5 mm. diametro. *Folia* opposita, paribus inter se saepissime parum inaequalibus, elliptica, oblongo-elliptica, vel elliptico-ovata, apice acute acuminata, basi cuneata, acuminata, vel rarius cuneato-rotundata, 7-16 cm. longa, 3-7 cm. lata, chartacea vel rigide chartacea, sicca supra fusco-viridia, subtus brunnea, supra glabra, subtus praesertim ad nervos pilosa, pilis plus minusve deciduis, costa supra conspicua vel leviter impressa subtus prominente, nervis lateralibus utrinque circa 7 supra conspicuis subtus prominulis, nervis transversis subtus subprominulis, petiolo 3-7 mm. longo suffulta; stipulae breves, rigidae, fimbriatae, stramineae. *Cymae* terminales, ad 2 cm. longae, pauciflorae, pedunculo et ramulis tomentellis, pedicellis 4 mm. longis etiam tomentellis; bractae stipulis similes. *Receptaculum* 2 mm. longum, tomentosum. *Calycis* tubus brevis, lobi 4-5, late lanceolati, acuti, 3.5-4 mm. longi. *Corolla* alba (ex *Kerr*), extra furfuracea; tubus 4 mm. longus, intra apice dense villosus; lobi 4-5, circa 3 mm. longi. *Stamina* 4-5,

inclusa, filamentis 0.5 mm. longis ad corollae tubi medium adfixis, antheris obtusis 1.5 mm. longis. *Stylus* 5 mm. longus, stigmatibus duobus 1 mm. longis. *Fructus* 7 mm. longus, 5 mm. diametro, calyce persistente coronatus.

Kao Kalakiri, 800 m., evergreen forest, *Kerr* 7769A.

Saprosma distans *Craib* [Rubiaceae-Psychotrieae]; ab affini *S. ternato* Hook. f. nervis transversis paucioribus inter se magis distantibus haud tam regularibus recedit.

Ramuli glabri, compressi, primo subfusci, mox cortice stramineo obtekti. *Folia* per 3 vel opposita, oblongo-elliptica, apice acute attenuata vel acuminata, basi cuneata, ad 27 cm. longa et 8 cm. lata, rigide chartacea, sicca supra fusco-viridia vel fusca, subtus pallidiora, pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque 11-15 supra conspicuis subtus prominentibus intra marginem anastomosantibus, nervis transversis inter se distantibus subtus prominulis, petiolo usque ad 1 cm. longo glabro supra canaliculato suffulta; stipulae fimbriatae, 5 mm. longae. *Infructescentia* axillaris, pedunculo communi 4-5 cm. longo incluso 7-8 cm. longa, glabra. *Fructus* saepissime subovoideus, circa 9 mm. longus et 7 mm. diametro, calyce persistente lobato circa 2 mm. longo coronatus.

Pattani, Bukit, *Put* 3640.

Saprosma latifolium *Craib* [Rubiaceae-Psychotrieae]; ab affini *S. consimile* Kurz foliis pro rata multo latioribus basi fere semper rotundatis truncatis vel leviter cordatis recedit.

Ramuli annotini glabri, compressi, stramineo-corticati. *Folia* opposita, paribus inter se parum inaequalibus, saepissime oblonga vel elliptica, apice breviter acute acuminata, basi rotundata, truncata, late leviter cordata, vel rarius late cuneata, 5-10 cm. longa, 2.5-5.5 cm. lata, rigide chartacea, sicco supra fusciscentia, subtus pallidiora, pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque circa 10 supra saepe impressis subtus prominulis intra marginem anastomosantibus, nervulis paucis subtus conspicuis, subsessilia vel petiolo usque ad 3 mm. longo suffulta; stipulae 4 mm. longae, deciduae. *Fructus* sparsi, ad apices ramulorum positi, subsessiles, obovoideo-ellipsoidei, 8 mm. longi, 5 mm. diametro, fusci, glabri, calycis segmentis deltoideis 1 mm. longis persistentibus coronati.

Korat, Kao Lêm, *Put* 3531.

Saprosma longicalyx *Craib* [Rubiaceae-Psychotrieae]; a *S. consimile* Kurz eiusque affinioribus calycis segmentis multo longioribus et angustioribus facile distinguendum.

Frutex circa 1.5 m. altus (ex *Kerr*); ramuli graciles, glabri, mox cortice stramineo obtekti, ad 3 mm. diametro. *Folia* opposita, paribus inter se conspicue inaequalibus, saepissime oblongo-oblancoolata vel elliptico-oblancoolata, apice acute acuminata, basi

cuneata vel late cuneata, 4.5–16 cm. longa, 1.5–6 cm. lata, chartacea, sicca supra viridia, subtus pallide viridia, subtus in nervorum axillis parce breviter hirsuta, aliter pagina utraque glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque circa 10 supra plus minusve conspicuis subtus prominulis intra marginem anastomosantibus, nervis transversis inter se distantibus subtus conspicuis vel subprominulis, petiolo usque ad 8 mm. longo glabro supra canaliculato suffulta; stipulae acuminatae, 3–5 mm. longae, glabrae, stramineae, deciduae. *Flores* albi (ex Kerr), ad ramulorum apices glomerati, subsessiles. *Receptaculum* breve, glabrum. *Calycis* tubus 1.5 mm. longus, glaber, segmenta 4, linearia, 3.75 mm. longa, basi 1 mm. lata, ciliolata, aliter glabra. *Corollae* tubus 8 mm. longus, intra superne villosus, lobi 4, circa 4 mm. longi et 1.5 mm. lati, supra basem versus pilosi.

Nakawn Sritamarat, Kao Luang, 400 m., evergreen forest, Kerr 15,412.

Saprosma parvifolium Craib [Rubiaceae-Psychotrieae]; a *S. consimile* Kurz foliis subtus ad costam puberulis et in nervorum axillis pilosis recedit, etiam *Amaracarpus saxicolae* Ridl. simile sed ramulis magis distincte puberulis et foliis subtus puberulis distinguendum.

Frutex circa 1.5 m. altus (ex Kerr); ramuli annotini graciles, puberuli, pallide corticati. *Folia* opposita, paribus inter se plus minusve inaequalibus, elliptica, oblonga, vel oblongo-lanceolata, apice subacutae acuminata vel subacuminata, basi cuneata vel rotundata, saepe parum inaequilateralia, 2.5–6.5 cm. longa, 1.3–3 cm. lata, rigide chartacea, sicca supra subfusca, subtus brunnea, supra glabra, subtus ad costam puberula et in nervorum axillis pilosa, costa supra prominula subtus prominente, nervis lateralibus utrinque 5–6 supra subconspicuis vel fere obscuris subtus prominulis intra marginem anastomosantibus, nervulis paucis subtus conspicuis vel subprominulis, petiolo usque ad 4 mm. longo supra canaliculato subtus puberulo suffulta; stipulae deciduae. *Inflorescentia* terminalis, glomerulata, pauciflora, floribus albis (ex Kerr) breviter pedicellatis. *Receptaculum* circa 1 mm. longum, puberulum. *Calycis* tubus brevissimus, segmenta late deltoidea, subobtusata, 1 mm. longa, basi fere 1 mm. lata. *Corolla* superne extra densius puberula; tubus 4 mm. longus, intra superne piloso-barbatus; lobi 5, circa 3 mm. longi et 1.5 mm. lati. *Stamina* exserta, filamentis 1.5 mm. longis 1 mm. infra corollae tubi apicem adfixis glabris, antheris 1.25 mm. longis. *Stylus* bene inclusus, stigmatibus ad filamentorum insertionem attingentibus.

Prachuap, Kao Luang, 300 m., by stream in evergreen forest, Kerr 10,794.

LXVII.—NEW SPECIES FROM MOUNT ELGON.

A. A. BULLOCK.

The following hitherto undescribed species have been detected while preparing for publication a list of Mt. Elgon plants collected by Major E. J. and Mrs. Cyril Lugard. A few new name-combinations were also found to be necessary, and these have been included.

The Orchidaceae have been worked out by Mr. V. S. Summerhayes, and *Combretum elgonense* was described by Mr. A. W. Exell, of the British Museum. In addition the writer is indebted to Dr. Diels and members of the staff at the Berlin Herbarium for the examination of a large number of specimens. Acknowledgment for this is made under the appropriate species. Grateful thanks are also due to Mr. J. Hutchinson, for much advice and for checking the manuscript and proofs.

Crassula Wrightiana *Bullock*, sp. nov. [Crassulaceae]; a *C. aquatica* (Linn.) Schoenl., omnibus partibus majoribus, foliis oblongis vel oblongo-spathulatis valde distincta.

Herba erecta vel procumbens, omnino glabra, 6–30 cm. vel ultra alta, caulibus simplicibus vel parce ramosis, internodiis 1·5 mm.–3·5 cm. longis, nodis inferioribus radices emittentibus. *Folia* opposita, decussata, basi in vaginam usque 2 mm. longam connata, oblonga vel oblongo-spathulata, apice obtusa vel rotundata, 5·5–18 mm. longa, 1·5–5 mm. lata. *Flores* tetrameri, axillares, solitarii vel in fasciculis paucifloris dispositi, minuti, pedicellis 5–10 mm. longis. *Sepala* basi connata, oblonga, obtusa, usque ad 1 mm. longa. *Petala* obovata, apice rotundata, sepalis fere duplo longiora. *Filamenta* complanata, sursum attenuata; antherae parvae, subglobosae. *Carpella* ovoidea, leviter alata, 1–1·2 mm. longa, stylo breve leviter uncinato coronata, ut videtur 1-ovulata. *Semina* oblonga, apice basique rotundata, dense minutissime tuberculata.

KENYA COLONY. Nairobi, 6000 ft., *Dowson* 476 (type). Aberdare Mts. and the base of Mt. Kenya, *Dowson* 73. Eldama Ravine, 7000–7500 ft., Oct. 1898, *Whyte s.n.* Third day's march from Eldama Ravine, *Whyte s.n.* Between Nandi and Mumias, *Whyte s.n.* Limuru, in water, herb 1–1½ ft. high, rather succulent, with small red and white flowers, 10 June, 1918, *Snowden* 582. Mau, on damp rocks, Nov. 1905, *G. S. Baker* 339. River in Mau Forest, a prostrate water plant, *Mettam* 236. Mt. Elgon: 6500–7500 ft., in swamp, erect herb to 1 ft., flowers white with a purple throat, Oct.–Nov. 1930, *Major E. J. Lugard* 215; 6400 ft., in swamp, erect herb to 3 in. high, flowers white, 28 Feb. 1931, *Major E. J. Lugard* 538. Rumuruli distr., 6000 ft., fleshy herb about 8 in. high with very pale pink flowers, growing in marsh, July, 1931, *Napier* 1229.

UGANDA PROTECTORATE. Behungi Marsh, 8000 ft., in ditch, and common in marshes throughout the Virunga Mts. at the same altitude, a herb with succulent leaves and pink strongly scented flowers, 1 Dec. 1930, *B. D. Burt* 2924. Ankole, Shema County, at

Kitakata, a small succulent herb 3-6 in. high with small red flowers, growing near edges of water, or in water, at the hot springs, 24 Jan. 1929, *Snowden 1288*.

TANGANYIKA TERRITORY. Arusha, 5000 ft., in water, Dec. 1927, *Haarer 916*; Oct. 1925, *Haarer 79b*.

A member of the *Bulliarda* group, *Crassula Wrightiana* is named in honour of Mr. C. H. Wright who many years ago decided that the plants collected by Mr. W. J. Dowson, and cited above, represented an undescribed species. Mr. Wright's notes on his dissections of the flowers are preserved in a manuscript attached to one of the sheets in the Kew herbarium, and are embodied in the description with very minor additions to include the wide range of specimens now available.

The variation observed is due to the different habitats in which the plant is found. When growing in water, the stems (and internodes) become elongated in order to raise the floriferous upper portions above the water surface. Branching normally takes place only towards the base, where nodal rooting also occurs, but in the (comparatively) deep-water forms short branches are found in the floriferous region. The land form is quite different in appearance, and without the intermediate forms included in the Kew collection, might reasonably be regarded as a distinct species. Here the stems are short, and the internodes often no longer than the short sheath formed by the connate leaves; the latter then appear to be imbricate. All parts of the plant in this condition approach the smallest measurements given in the description, while the parts of the water form are always larger. Varying degrees of wetness of the habitat produce the intermediate forms, and conditions approaching both extremes may often be seen on the same plant.

C. Wrightiana appears, from the description, to have some affinity with *C. Granvikii* Mildbr., a Mt. Elgon plant which, however, has 4-seeded carpels.

***Crassula erubescens* Bullock**, sp. nov. [Crassulaceae]; *C. Granvikii* Mildbr. affinis, sed foliis majoribus oblongo-lanceolatis differt.

Herba parva, perennis, erecta, omnino glabra, usque 5 cm. alta, caulibus simplicibus dense foliatis, internodiis maturis usque 5-6 mm. longis sed plerumque (in regione florifera) 1-1.5 mm. longis, nodis inferioribus radicanibus. *Folia* rubra, opposita, decussata, imbricata, basi in vaginam 1-1.5 mm. longam connata, oblongo-lanceolata, apice acuta, 1-1.5 cm. longa, 2-3.5 mm. lata. *Flores* tetrameri, axillares, solitarii, perpauci, minuti, pedicellis filiformibus usque 1.5 cm. longis. *Sepala* basi connata, lanceolata, subacuta, circiter 1.5 mm. longa, intus concava. *Petala* sepalis subaequilonga, oblonga, apice obtusa. *Filamenta* filiformia, sepalis paulo breviora. *Antherae* subglobosae, minutae. *Carpella* ut videtur 4-ovulata.

KENYA COLONY. Mt. Elgon, 8250 ft., a rock plant 2 in. high with bright scarlet foliage and cream-coloured flowers, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard 422*.

A species of the *Bulliarda* group, with (in the only specimen seen) short internodes, and imbricate leaves coloured bright scarlet. It is allied with *C. Granvikii* on account of the 4-ovulate carpels, but the large scarlet leaves and very short internodes render it distinct.

Kalanchoe Lugardii *Bullock* sp. nov. [Crassulaceae]; a *K. Petitiana* A. Rich., floribus majoribus, calycis lobis longioribus, pedicellis longioribus, recedit.

Herba succulenta, omnino glabra, ut videtur glauca, usque 1.6 m. alta. *Folia* non visa. *Flores* in inflorescentiis corymbosis terminalibus dispositi, pedicellis circiter 1-1.5 cm. longis, bracteis inferioribus lanceolatis acutis circiter 1.5 cm. longis. *Calyx* fere ad basin 4-lobatus, lobis acutis anguste lanceolatis 5-8 mm. longis. *Corolla* pallide lutea, tubo sub anthesin circiter 1.7 cm. longo, lobis ovato-lanceolatis acutissimis usque 7 mm. longis. *Stamina* 8; superiora petalis opposita, inferiora petalis alterna; filamenta breviora; antherae subglobosae, fere 1 mm. diametro. *Squamulae* 4, lineares, 3.5 mm. longae. *Carpellae* 4, lineares, erectae, 8 mm. longae, glabrae, stylis basi articulatis erectis 6 mm. longis, stigmatibus capitellatis subcohaerentibus. *Folliculi* membranacei, 1.1 cm. longi, apiculati; semina minuta, numerosa, longitudinaliter lamellata, lamellis transverse striatis.

KENYA COLONY. Mt. Elgon, 6500-7500 ft., very succulent herb to 5 ft., flowers pale yellow, Oct.-Nov. 1930, *Major E. J. Lugard 115*.

The confusion existing in this genus renders the classification of any individual specimen extremely difficult, and *K. Lugardii* is proposed as a new species with great reserve, the material available being somewhat inadequate. The following specimens may also belong to this species.

TANGANYIKA TERRITORY. Between Lakes Tanganyika and Rukwa, about 6000 ft., *Nutt s.n.* Sambala, Kondoa Distr., 4900 ft., a conspicuous waxy-white-flowered herb in *Commiphora* bush, up to 3½ ft. high, 12 July 1929, *B. D. Burtt 2245*. Suji, Pare Distr., 5000 ft., Aug. 1928, *Haarer 1672*. Kymbila Distr., Sept. 1910, *Stolz 261*.

Impatiens phlyctidoceras *Bullock*, sp. nov. [Balsaminaceae]; *I. digitato* Warb. affinis sed foliis minoribus, calcari recto multo longiore basi haud digitatim lobato sed basin versus irregulariter 4-7-papillato differt.

Herba erecta, usque 1 m. alta, caulibus mox glabrescentibus, internodiis superioribus circiter 1.5-3 cm. longis. *Folia* alterna, herbacea, ovata usque elliptico-rotundata, apice vix acuminata, basi late cuneata, usque 2.5 cm. longa et circiter 1.5 cm. lata, utrinque leviter pilosa, marginibus regulariter mucronato-crenatis; petioli circiter 5 mm. longi. *Flores* in axillis foliorum superiorum solitarii,

pedicellis leviter hirsutis 2.5-4 cm. longis. *Sepala* lateralialia lanceolata, 6 mm. longa, 2 mm. lata, extra leviter pilosa. *Labellum* subglabrum, late infundibuliforme, dorso apiculatum, in calcar recto 2.5-3.5 cm. longo et 3 mm. diametro productum; calcar basin versus irregulariter 4-7-papillatum, glabrum vel parce pilosum. *Vexillum* cucullatum, subhemisphaericum, glabrum, 7 mm. longum, apice bilobulatum. *Alae* glabrae, 5 mm. longae, profunde bilobae, lobis bilobulatis, lobula inferiore suborbiculari 4 mm. diametro, lobulis superioribus paullo minoribus. *Capsula* matura non visa.

KENYA COLONY. Mt. Elgon, 11,700 ft., a herb up to 3 ft. high, with scarlet-crimson flowers, Dec. 1930, *Mrs. Cyril Lugard* 313.

This very striking new member of the section *Microcentron* Warb. is most closely allied to *I. digitata* Warb., from Mt. Kilimanjaro. The two species are, however, readily separable by means of their peculiar spurs. In both cases these are rather stout, that of *I. digitata* being about $\frac{3}{4}$ in. long, and terminating in several very distinct finger-like processes, whilst in *I. phlyctidoceras* the spur is about $1\frac{1}{4}$ in. long, and towards the base a few to several small warts or papillose protrusions are found. Further distinguishing characters are to be found in the smaller leaves, shorter petioles, and more glabrous, stouter stems with shorter internodes of *I. phlyctidoceras*. The writer is much indebted to Dr. Mildbraed for comparing the specimen cited with the material of the genus in the Berlin herbarium, where it could not be matched.

Trochomeria Harmsiana *Bullock*, sp. nov. [Cucurbitaceae]; *T. pectinatae* (Sond.) Cogn. affinis, petiolis glabris, foliorum segmentis integris supra (haud infra) scabrescentibus, floribus masculis fasciculatis majoribus, differt.

Herba repens vel scandens, cirrhosa, caulibus glabris tenuiter flexuosis quadrangularibus. *Folia* digitate 3-loba, lobis lateralibus saepe alte bilobulatis; lobi et lobuli lineares, infra subglabri, supra satis dense setose scabrescentes; petioli glabri, circiter 0.5-1.5 cm. longi; stipulae deciduae, amplexicauli-subrotundatae, usque 1.5 cm. diametro, marginibus fimbriato-dentatis, dentibus subulato-acuminatis usque 7 mm. longis, extra parce scabrigo-puberulae, intus glabrae. *Flores masculi* axillares, solitarii vel 2-3-fasciculati, pedicellis gracilibus subglabris usque 1.5 cm. longis. *Receptaculum* circiter 1.5 cm. longum et apice 4 mm. diametro, basin versus paullo angustatum, intus basin versus leviter pilosum, ceterum glabrum. *Sepala* patula vel reflexa, subulato-triangularia, circiter 2 mm. longa. *Petala* patula, lineari-lanceolata, 1.5 cm. longa, basi 3 mm. lata, acuta, glabra. *Staminum filamenta* 5 mm. longa, crassa, basin versus pilosa; antherae in capitulo cylindrico 3.5 mm. longo cohaerentes. *Pistillodium* tenuiter cylindricum, 4 mm. longum. *Flores feminei* masculis similes sed leviter minores, axillares, ut videtur solitarii, receptaculo supra ovarium valde constricto. *Ovarium* ellipsoideum, 4 mm. longum et 2.5 mm. diametro, glabrum. *Stylus* (supra constrictionem) 6 mm. longus, ramis stigmaticis 3

clavatis 3 mm. longis. *Staminodia* 3, filiformia, 6 mm. longa. *Nectaria* 3, conica, obtusa, 0.5 mm. longa. *Fructus* "globosus, sanguineus," non visus. *Semina* elliptica vel subobovata, compressa, circiter 1.2 cm. longa et 8 mm. lata.

KENYA COLONY. Mt. Elgon, 6500-7500 ft., creeper, flowers green, fruit a scarlet ball, Oct.-Nov. 1930, *Major E. J. and Mrs. Cyril Lugard* 143 (type, ♂ and ♀).

UGANDA. Kyasoweri, Mt. Elgon, 6000-7000 ft., a climbing savannah herb with greenish-yellow flowers, 16 April 1927, *Snowden* 1072 (♂).

The writer is indebted to Dr. H. Harms, who has examined this plant and compared it with the Berlin material of the genus. A member of the section *Eutrochomeria*, *T. Harmsiana* is remarkable for the long filiform staminodia of the female flowers, which are inserted at the extreme base of the tube of the receptacle, and alternate with the minute conical nectaries. It will be observed that although Mr. Snowden first collected this species on the Uganda side of Mt. Elgon, he obtained male plants only, and the later specimens collected by Major E. J. and Mrs. Cyril Lugard on the Kenya Colony side of the mountain, including both male and female plants, have been therefore selected as the type.

***Combretum elgonense* Exell**, sp. nov. [Combretaceae]; *C. ternifolium* Engl. et Diels affine, sed receptaculo conspicue lepidoto.

Arbor circa 6-7 m. alta, ramulis pubescentibus. *Folia* alterna vel plus minusve ternatim verticillata, petiolata, petiolo 10-18 mm. longo pubescente, lamina obovata vel late elliptica vel fere suborbicularia, 4-9 cm. longa, 3.5-5.5 cm. lata, apice breviter obtuseque acuminata vel obtusa vel rotundata, basi obtusa et plerumque acuminata, supra ad nervos sparsissime puberula, ceteroque glabra, nitidula, subtus pubescentia et subinconspicue lepidota, lepidibus margine haud contiguis, costis lateralibus utrinque 5-6 reticulatione supra prominulo. *Flores* tetrameri sessiles, in spicis axillaribus elongatis ad 8 cm. longis dispositi. *Receptaculum* inferius ad 3.5 mm. longum sparse puberulum et dense lepidotum, lepidibus margine contiguis, superius superne cupuliforme, inferne campanulatum, 3.5 mm. longum, 4.5-5 mm. diametro, sparse puberulum et basin versus dense lepidotum. *Calycis lobi* late deltoidei, 0.8 mm. longi, 1.5 mm. lati. *Discus* conspicuus, campanulatus, 3 mm. longus, 2.5 mm. diametro, margine libero dense piloso, ceteroque glaber. *Petala* transverse elliptica breviter unguiculata, 1.8 mm. longa, 1.6 mm. lata, glabra. *Staminum filamenta* exserta, 4 mm. longa. *Stylus* exsertus, 5 mm. longus, glaber. *Fructus* ignotus.

KENYA COLONY. Mt. Elgon, 6100 ft., spreading tree to 20 ft., flowers green, 1 Feb. 1931, *Major E. J. and Mrs. Cyril Lugard* 524.

This species belongs to Sect. *Glabripetalae* Engl. et Diels and resembles *C. ternifolium* Engl. et Diels in the leaf-shape and the verticillate arrangement of the leaves but differs from it in the conspicuously lepidote receptacle.—*A. W. Exell*.

Hypericum afromontanum *Bullock*, sp. nov. [Hypericaceae]; *H. intermedio* Steud. affinis, floribus capitato-congestis, petalis multo majoribus, sepalis latioribus, glandulis stipitatis brevioribus crassioribus, stylis brevioribus, foliis erectis multo minoribus parce puberulis, caulibus simplicibus differt.

Herba perennis usque 45 (raro 60–90) cm. alta; caules annui, simplices vel apicem versus parce ramosi, glabri vel praesertim inferne puberuli, teretes, graciles, internodiis basin versus circiter 1 cm. longis sed supra multo longioribus. *Folia* erecta, sessilia, oblonga vel oblongo-lanceolata, apice rotundata usque subacuta, basi truncata vel leviter auriculato-amplexicaulia, usque 2.3 cm. longa sed plerumque circiter 1.5–2 cm. longa et 5–7 mm. lata, utrinque puberula, plerumque nigro-glanduloso-punctata. *Flores* 5-meri, in cymas capituliformes terminales aggregati; pedunculi usque 10 cm. longi sed saepe minores, circa vel supra medium bracteis duabus oppositis praediti; bractee foliis similibus sed minores, basi glandulis nigris stipitatis (ut videtur subfasciculatis) dense instructae, laminis glandulis nigris punctatis marginibus laevibus vel glandulis nigris stipitatis praeditae (folia summa interdum basi stipitato-glandulosae). *Sepala* ovato-lanceolata, apice acuta, 5 mm. longa et fere 2 mm. lata, marginibus glandulis stipitatis nigris ciliata. *Petala* lutea, rubro-vittata, inaequilateralia, obovata, apice rotundata, 8 mm. longa et usque 5 mm. lata, nigro-glanduloso-punctata. *Stamina* 35; filamenta fere libera. *Ovarium* ovoideum, 1.5 mm. longum, glabrum, apice glandulis stipitatis 3 ornatum; styli 3, circiter 3 mm. longi. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 11,800 ft., erect herb to 18 in., flowers yellow striped with red, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 338a (type); 11,000–12,000 ft., an uncommon single-stemmed moorland herb up to 18 in. high, leaves speckled black, petals yellow with a red streak on the back, sepals and bracts with stalked black glands, Feb. 1930, *Gardner* 2259.

UGANDA PROTECTORATE. Mt. Elgon. 10,000–12,000 ft., in short grassland, a purple-stemmed herb 2–3 ft. high with red and yellow flowers, 22 Oct. 1916, *Snowden* 479; 12,000 ft., a rare herb with yellow flowers in swampy grassland on the west side of the crater, Jan. 1918, *Dümmer* 3301; 11,400 ft., in grass country below Madangi Camp, a herb 18 in. high, flowers yellow, March 1930, *Liebenberg* 1622.

Dr. Mildbraed very kindly examined this plant and without hesitation declared it to be an undescribed species. Mr. Snowden was the first to find this interesting species, but his specimens were unfortunately badly damaged, and the flowers lost. It is hoped that a figure and further notes will appear in an early number of Hooker's *Icones Plantarum*.

Euphorbia Euryops *Bullock*, sp. nov. [Euphorbiaceae]; *E. Schimperianae* Scheele affinis, caulibus simplicibus dense foliatis, foliis anguste oblongis usque oblanceolatis, basibus prominentibus

tuberculiformibus foliorum delapsorum valde distincta ; habitu ramulorum floriferorum *E. epicyparissias* E. Mey., sed foliis minoribus inflorescentiis majoribus multo laxioribus facile distinguitur ; ab ambabus ovario 2-loculari differt.

Herba perennis, usque 6 dm. alta ; caules pilis crispis leviter pubescentes, stricti, annui, petiolis tuberculiformibus foliorum delapsorum conspicue notati ; rami floriferi cymam terminalem 4-7 radiatam efformantes, bracteis foliaceis oblongo-lanceolatis 2.5 cm. longis suffulti, ramis aliis similibus infra umbellam ex axillis foliorum orti. *Folia* brevissime petiolata, alterna, spiraliter disposita, exstipulata, anguste oblonga usque oblanceolata, apice obtusiuscula, mucronulata, basin versus angustata, 3.5-4.5 cm. longa, 4-5 mm. lata, utrinque minute densissime papilloso-pustulata, inferne decidua. *Rami inflorescentiae* 5-10 cm. longi, ramulis brevibus secundariis 1-3 vel 4 praediti. *Bractee* (saltem maturae) saturate sanguineo-coloratae, oppositae, altera saepe mox decidua altera persistente sessiles, ovatae usque rhomboideo-ovatae, apice subobtusae, mucronulatae, basi cuneatae usque fere rotundatae, usque 1.5 cm. longae et 8 mm. latae. *Involucra* solitaria, subsessilia, campanulata, 1 mm. longa et circiter 1 mm. diametro, glandulis 4 et glandula 1 abortiva minima cum lobis 5 inflexis oblongis vel ovatis ciliatis apice obtusis vel bifidis alternantibus ; glandulae ambitu suborbiculares, 1.1 mm. diametro, superne crescentiformes. *Pedicelli* florum masculorum filiformes, glabri. *Filamenta* brevina, basi leviter incrassata, glabra. *Antherae* in alabastro suborbiculares, 0.4 mm. diametro, loculis ellipsoideis transverse dehiscentibus. *Ovarium* 2-loculare ; styli 2, bibrasmi. *Capsula* glabra, exserta, graciliter pedicellata, bilocularis, leviter compressa, inter loculos valde constricta, ambitu quadrato-suborbicularis, circiter 2 mm. longa et lata, emarginata, basi truncata latissima, sursum satis angustata, saepe marginibus apice leviter recurvata, obtuse subrostrata. *Semina* oblongo-ellipsoidea, 1.5 mm. longa, apice unilateraliter carunculata, basi cordata, pallide cinerea, laevia.

KENYA COLONY. Mt. Elgon, 10,000 ft., erect to 2 ft., bracts deep crimson, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 380.

It is hoped that a figure and description of this species will appear in an early part of Hooker's *Icones Plantarum*.

***Crotalaria Lugardiorum* Bullock, sp. nov.** [Papilionaceae] ; *C. glaucae* Willd. affinis, sed pilis brevibus basibus nigris vestita, floribus majoribus, fructibus longioribus differt.

Herba annua, ramosa, usque 4.5 dm. alta ; caules primum pilis brevibus basibus nigris vestiti, demum glabrescentes. *Folia* unifoliolata, subsessilia, lanceolata usque anguste lineari-lanceolata, circiter 2.5-5 cm. longa et 0.3-1.2 cm. lata, apice rotundata usque acuta, mucronulata, basin versus angustata, supra glabra, subtus pilis brevibus basibus nigris vestita, costa supra impressa, nervis lateralibus utrinque circiter 5 sed saepe valde indistinctis. *Inflorescentia* terminalis, racemosa, laxa, circiter 8-12-flora, usque 20 cm.

longa, pedunculis 4-6 cm. longis, pedicellis gracilibus 4-7 mm. longis, bracteis minutis lineari-filiformibus deciduis circiter 2 mm. longis, omnino pilis brevibus basibus nigris vestita. *Calyx* usque 7 mm. longus, profunde 5-lobatus, lobis lanceolatis valde acutis 5 mm. longis et 1 mm. latis, extra pilis brevibus adpressis basibus nigris satis dense praeditus. *Vexillum* luteum, ellipticum, limbo 1 cm. longo et circiter 6 mm. lato, extra apicem versus leviter et breviter adpresse pubescens. *Alae* oblongae, circiter 7 mm. longae, 2 mm. latae. *Carina* acuta, 1 cm. longa, infra medium angulo recto curvata. *Legumen* cylindricum, 2.5 cm. longum, 5 mm. diametro, pilis brevibus adpressis basibus nigris satis dense vestitum. *Semina* parva, numerosa, longe funiculata, ovato-cordata.

KENYA COLONY. Mt. Elgon, 6700 ft., a spreading herb to 1 ft. high, flowers yellow above, russet below, 1 Feb. 1931 (fl. and fr.), *Major E. J. and Mrs. Cyril Lugard* 530; 6500-7500 ft., spreading herb to 18 in., flowers yellow above, russet below, Oct.-Nov. 1930, *Major E. J. Lugard* 197 (type).

Dr. Harms, to whom the writer is indebted for examining the specimens cited, is of the opinion that they are hardly distinguishable from *Crotalaria glauca* Willd. The peculiar indumentum with which the plants are more or less densely clothed is not, however, to be seen on any of the numerous specimens of *C. glauca* preserved at Kew, and this, coupled with the larger flowers and fruits, constitute sufficient grounds for establishing a new species.

***Trifolium Lugardii* Bullock**, sp. nov. [Papilionaceae]; habitu *T. simensis* Fresen., sed *T. Steudneri* Schweinf. affinis, caulibus subsimplicibus, foliis longius petiolatis, foliolis et stipulis multo majoribus, inflorescentiis majoribus, calyce corollae excedente differt.

Herba erecta, usque 6 dm. alta, subglabra. *Folia* glabra vel ad apicem petiolorum leviter villosa, petiolis sulcatis 3-5 cm. longis, foliola subaequalia, oblongo-lanceolata vel anguste oblonga, apice subobtusata, mucronulata, basi subrotundata usque subacuta, marginibus acutissime serratis, nervis lateralibus numerosis subparallelis adscendentibus; stipulae usque 3 cm. longae, ad petiolum adnatae, bilobae, lobis liberis triangulari-lanceolatis acute acuminatis circiter 1 cm. longis. *Pedunculi* solitarii, ex axillis foliorum superiorum orti, circiter 6 cm. longi, glabri vel apicem versus leviter villosi. *Flores* purpurei, brevissime pedicellati, in capitulis involucre dispositi; bractae lanceolatae, acute acuminatae, 1-1.2 cm. longae. *Calyx* striatus, 11-12 mm. longus, dentibus anguste lineari-lanceolatis 6-7 mm. longis corollam superantibus. Corolla 9 mm. longa. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 6500-7500 ft., erect herb to 2 ft. high, with purple flowers, Oct.-Nov. 1930, *Major E. J. Lugard* 97.

Although similar to *T. simensis* Fresen. in habit, the presence of a conspicuous involucre of bracts subtending the heads of flowers places *T. Lugardii* in the section *Vesicastrum* near to the annual *T. Steudneri* Schweinf., from which it differs in habit, the greater size

of all its parts, and particularly in the relative lengths of the calyx and corolla.

Astragalus elgonensis *Bullock*, sp. nov. [Papilionaceae] ; ab *A. somalensi* Taub. var. *Lindblomii* Harms, caulibus repentibus, stipulis persistentibus multo majoribus, racemis brevioribus densius floriferis, floribus majoribus differt.

Herba repens, caulibus quadrangularibus vel sulcatis glabris. *Stipulae* persistentes, ovato-triangulares, apice acutae, circiter 1 cm. longae et 5 mm. latae, inaequilaterales, indistincte nervosae, glabrae. *Folia* imparipinnata, ambitu oblonga, 4.5–6.5 cm. longa. *Foliola* 6–8-jugata, oblonga, circiter 1 cm. longa et 3.5 mm. lata, utrinque rotundata, mucronulata, brevissime petiolulata, marginibus parce albido-piloso-ciliatis, supra glabra, subtus costa albido-pilosa. *Racemi* laterales, in toto circiter 2.5 cm. longi, usque 12-flori, pedunculo 1–1.5 cm. longo parce nigro-puberulo, pedicellis 2 mm. longis dense nigro-puberulis, floribus caeruleo-roseis. *Calyx* anguste campanulatus, 4 mm. longus, parce nigro-puberulus, dentibus triangularibus usque 1.5 mm. longis. *Vexillum*, *carinae* et *alae* subaequilongae, circiter 8 mm. longae. *Fructus* immaturi oblongi, transverse nervosi, circiter 1.5 cm. longi et 4 mm. lati, apice basique triangulari-acuti, glabri.

KENYA COLONY. Mt. Elgon, 12,800 ft., a creeping herb with mauvy pink flowers, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 334.

Dr. Harms has very kindly examined this plant and compared it with the material in the Berlin herbarium, where it could not be matched. The specimen cited is infected with the rust fungus *Uromyces Astragali* (Opiz) Sacc.

Ferula montis-Elgonis *Bullock*, sp. nov. [Umbelliferae] ; inter species congeneres pedunculis brevibus, floribus bracteis inclusis valde distincta.

Herba perennis, circiter 2 m. alta, omnino glabra. *Folia* basalia magna, longe petiolata, pinnatim decomposita, segmentis ultimis linearibus circiter 1 cm. longis et 1 mm. latis ; lamina ambitu triangulari-ovata, 30–40 cm. longa, 20–25 cm. lata vel ultra. *Umbellae* compositae, in inflorescentiis racemiformibus dispositae, ex axillis bractearum productae ; bractee spathiformes apice saepe foliis laminis valde reductis ornatae, umbellas superantes et includentes ; pedunculi usque 6 cm. longi, apicem versus bracteolis duabus instructi ; radii numerosi, umbellato-radiati, circiter 3–5 mm. longi. *Calyx* minutus, lobis triangularibus fere 0.5 mm. longis. *Corolla* luteo-alba ; petala ovata, apice acute acuminata, acumine inflexa, basi subcordata, 2 mm. longa et fere 1.5 mm. lata. *Filamenta* 1.5 mm. longa, filiformia. *Antherae* subglobosae, 0.75 mm. diametro, basifixae sed inflexo-pendentes. *Discus* 2 mm. diametro, marginibus undulatis. *Styli* minuti, obtusi. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 12,000 ft., a herb up to 7 ft. high, flowers cream, enclosed in pale green bracts, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 425.

The mountains of tropical Africa are comparatively poor in their umbelliferous flora, and the material available for study is often scanty. The large, pale green bracts of this species, the lower ones at any rate crowned with a much reduced leaf lamina, are about twice as long as the umbel which they protect, and in the young state, hide.

The writer is much indebted to Major Norman, of the British Museum, who examined this plant and advised its description as a new species.

Heracleum elgonense (Wolff) *Bullock*, comb. nov. [Umbelliferae]. — *Malabaila elgonensis* Wolff in Notizbl. Bot. Gart. Berlin, viii. 231 (1922). *Heracleum inexpectatum* Norm. in De Wild. Pl. Bequaert. iv. fasc. 2, 308 (1927); et *l.c.* iv. fasc. 3, 355 (1928).

The material now available for study leaves no doubt that Major Norman, of the British Museum, was correct in assigning this species to the genus *Heracleum* Linn., and it is unfortunate that the trivial used by him is antedated. At Brussels Dr. E. A. Mearn's specimens Nos. 1076, 1429, 1449, and 1464, all collected on Mt. Kenya at about 11,000 ft., are preserved, and there is a specimen collected in "East Tropical Africa" by Dr. Gregory at the Natural History Museum. The type specimen, which was collected by H. Granvik in 1920, at about 11,000 ft. on Mt. Elgon, is preserved at Berlin. The following specimens are incorporated in the Kew Herbarium:—

KENYA COLONY. Mt. Elgon, moorland, 9000–13,000 ft., a herb up to 3 ft. high, outer petals of the outer flowers of each umbel greatly enlarged, flowers greenish-white, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 405. Mt. Kenya, common between 11,000 and 14,000 ft. (received at Kew in Jan., 1912), *Hutchins* 397; upper alpine region, about 2 ft. high, flowers white, foetid, Feb. 1922, *R. E. and Th. C. E. Fries* 1372.

UGANDA PROTECTORATE. Mt. Elgon, above Bulembuli, a tall herb growing near a stream, April 1930, *Liebenberg* 1681.

Tylophora Lugardae *Bullock*, sp. nov. [Asclepiadaceae]; *T. tenuipedunculatae* K. Schum. affinis, sed caulibus pubescentibus, pedunculis brevioribus minus gracilibus, floribus majoribus differt.

Herba volubilis, caulibus gracilibus primum breviter patente hirsutis demum glabrescentibus. *Folia* lanceolata vel oblongo-lanceolata, 3–4.5 cm. longa, 1–1.5 cm. lata, basi obtusa vel subrotundata, apice acuta, mucronulata, supra costa impressa pubescente, cetera utraque mox glabrescentia, nervis lateralibus indistinctis, petiolis circiter 0.1–1 cm. longis supra canaliculatis et pubescentibus. *Pedunculi* subaxillares vel sublaterales, glabri, graciles, circiter 1.5 cm. longi, fasciculis vel cymis duabus subdistantibus 3–6-floris praediti, bracteis minutis lanceolatis hirsuto-ciliatis, pedicellis glabris 6–8 mm. longis. *Calyx* fere ad basin lobatus, lobis lanceolatis

acutis 1 mm. longis. *Corolla* rotata, 1.2 cm. diametro, lobis viridibus ovatis subacutis vel gradato-acuminatis 5 mm. longis et fere 3 mm. latis utraque glabris sed marginibus saepe ciliatis. *Coronae lobi* tuberculi-formes longitudinaliter oblongi, columnam staminalem adnati, 2 mm. longi, apice in apiculo carnosio lineare 0.5 mm. longo producti. *Stylus* truncatus. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 6500 ft., a twiner, flowers green with maroon centre, 22 May, 1931, *Mrs. Cyril Lugard* 656.

Collected at the same time as, and evidently growing mixed with *Cynanchum altiscandens* K. Schum., this plant is proposed as new with some reserve. In its leaves and stems it bears a striking resemblance to species of *Cynanchum*, though the inflorescence and flowers are quite different. *T. Lugardae* differs from its close ally, *T. tenuipedunculata* K. Schum., in its stouter and shorter peduncles, larger flowers, and hairy stems; it is named in honour of the collector.

Oldenlandia scopulorum *Bullock*, sp. nov. [Rubiaceae]; inter species sectionis *Euoldenlandiae* habitu subericoideo caespitoso distincta.

Herba perennis, glabra, usque 10 cm. alta; caules annui, caespitosi, simplices vel parce ramosi, superne floriferi, internodiis circiter 5-15 mm. longis. *Folia* linearia 1-1.5 cm. longa et usque 1.5 mm. lata, uninervia, apice acuta, mucronulata, supra minute densissime papilloso-pustulata, ceterum laevia, marginibus valde recurvis. *Flores* circiter 3, in cymis axillaribus dispositi, pedunculis circiter 5 mm. longis, pedicellis 2-3 mm. longis, in statu fructifero longioribus. *Calyx* (ovario incluso) 2.5 mm. longus, lobis 4 triangulari-subulatis circiter 1.2 mm. longis. *Corolla* alba vel pallide purpureo-rosea, 5 mm. longa, tubo anguste infundibuliformi, limbo 4-lobato, lobis late triangularibus subacutis 2 mm. longis. *Capsula* subglobosa, calycis dentibus persistentibus coronata, circiter 2 mm. diametro, membranacea. *Semina* minuta, nigro-viridia, ambitu obovata, lateraliter triangulariter compressa, minute rugosa.

KENYA COLONY: Mt. Elgon, 7500 ft., around rocks in open spaces, a herb 3 in. high with white flowers, Oct.-Nov. 1930, *Major E. J. Lugard* 49 (type); 8250 ft., by rocks, herb with pale mauve-pink flowers, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 346.

This is a cushion-forming perennial herb growing in rock-crevices. It is allied to a number of species of the section, but is at once distinguished by its tufted habit. The writer is indebted to Dr. Mildbraed for the report "nicht in Herb. Berol."

Rubia longipetiolata *Bullock*, sp. nov. [Rubiaceae]; petiolis laminis duplo longioribus vel ultra, laminis anguste ovatis vel lanceolatis gradatim acutis distincta.

Herba scandens; caules graciles, quadrangulares, angulis aculeatis ceterum glabri. *Folia* longissime petiolata, petiolis usque 8 cm. longis aculeatis, laminis anguste ovatis vel lanceolatis apice

gradatim acutis basi rotundatis vel cordatis usque 4 cm. longis et circiter 1 cm. latis supra leviter scabridis infra subglabris vel glabrescentibus marginibus aculeatis e basi 5-nervis. *Cymae* paniculatae, axillares, pedunculis 1.5–2.5 cm. longis, pedicellis gracilibus 5 mm. longis. *Calyx* minutus, 4–5-lobulatus, glaber. *Corolla* viridis, rotata, 3 mm. diametro, lobis late ovatis subacutis. *Fructus* (non visi) “nigri.”

KENYA COLONY. Mt. Elgon, 6500–7500 ft., climbing herb, flowers green, fruit “a black berry,” Oct.–Nov. 1930, *Major E. J. Lugard* 204 (type). Eldama Ravine and Mau, 1898, *A. Whyte s.n.*

UGANDA PROTECTORATE. Without exact locality, a jungle creeper with rough square stems and greenish-white flowers, May 1880, *C. T. Wilson* 117. Mwengi, Toro, 5000 ft., 1913, *Snowden* 41.

***Galium mollicomum* Bullock**, sp. nov. [Rubiaceae]; inter species afromontanas caulibus molliter pubescentibus haud aculeatis, foliis 8-natis leviter et molliter hispidis vel subglabris marginibus haud aculeatis distincta.

Herba suberecta vel repens, circiter 2–3 dm. alta; caules subquadrangulares, ramosi, dense molliter pubescentes, haud aculeati. *Folia* 8-nata, linearia, circiter 1–1.5 cm. longa, leviter et molliter hispida vel subglabra, marginibus laevibus, uninervia, apice acutissima. *Flores* lutei, in cymis paucifloris axillaribus dispositi; bracteae oppositae, foliis similes. *Calyx* minutus, subtruncatus. *Corolla* rotata, fere ad basin lobata, lobis patentibus ovatis subacutis 1.75 mm. longis et 1 mm. latis. *Ovarium* dicoccum, ambitu globosum, 1 mm. diametro, glabrum. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 12,000 ft., *Battiscombe* 675; 11,000 ft., a trailing herb with yellow flowers, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 400; 11,800 ft., herb 8 in. high with yellow flowers, Jan. 1931, *Major E. J. and Mrs. Cyril Lugard* 400a (type).

UGANDA PROTECTORATE. Mt. Elgon, bamboo zone, April 1930, *Liebenberg* 1619; Madangi Camp, 10,000 ft., herb about 9 in., in grass, April 1930, *Liebenberg* 1621; 10,000 ft., edge of forest, Aug. 1930, *Soundy and Hancock* 81.

var. ***Friesiorum* Bullock**, var. nov., a typo caulibus subglabris vel brevissime puberulis differt.

KENYA COLONY. Mt. Kenya, about 7500 ft., Dec. 1921, *R. E. and Th. C. E. Fries* 479 (type); 1549. North-west slopes of Aberdare Mts., 7000 ft., *Dowson* 587. Summit of Mau, 10,000 ft., woody herb in damp situations, *Mettam* 183.

***Galium afro-alpinum* Bullock**, sp. nov. [Rubiaceae]; inter species afromontanas foliis crasse aculeatis 6-natis ceterum glabris distincta.

Herba repens vel scandens; caules ramosi, angulares, angulis aculeatis vel saepe laevibus, haud pilosi. *Folia* 6-nata, parva, linearia, usque 1 cm. longa et plerumque 1 mm. lata, marginibus crasse recurvo-aculeatis, uninervia. *Ramuli* floriferi brevissimi,

axillares, ad apicem flores 1-3 ferentes ; pedicelli usque 1 mm. longi. *Calyx* obsoletus. *Corolla* pallide lutea vel viridi-lutea, rotata, 4 mm. diametro, lobis ovatis subacutis 1.5 mm. longis et fere 1 mm. latis. *Fructus* nigri, dicocci, laeves, 2 mm. diametro.

KENYA COLONY. Mt. Elgon, 11,500 ft., herb with greenish yellow flowers climbing on *Artemisia afra* Jacq., Feb. 1930, *Gardner* 2245 ; 10,000-12,000 ft., creeping or climbing herb with pale yellow flowers, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 365 (type). Lake Naivasha : 6000 ft., Dec. 1893, *Scott Elliott* 6516 ; 6000 ft., 26 June 1931, *van Someren ex Napier* 1200. Mt. Kenya, climbing on *Senecio keniodendron* Fries in the upper alpine zone, 5 Feb. 1892, *R. E. and Th. C. E. Fries* 1276a.

UGANDA PROTECTORATE. Mt. Elgon, 13,000 ft., climbing on stems of giant *Senecio* sp. near the summit, Jan. 1918, *Dümmer* 3375 ; bamboo zone, 9500 ft., Aug., 1930, *Soundy and Hancock* 10.

Gynura montuosa (*S. Moore*) *Bullock*, comb. nov. [Compositae].—*Senecio montuosus* *S. Moore* in *Journ. Linn. Soc. Bot.* xxxv. 354 (1902), incl. var. *minor* *S. Moore*, l.c. 355.

An examination of the style arms of this species leaves no doubt that it should be transferred from *Senecio* to *Gynura*. A large number of specimens from Uganda, Kenya Colony, Tanganyika, Nyasaland, Belgian Congo, Cameroons and Southern Nigeria, is now preserved in the Kew herbarium. It was collected on Mt. Elgon by Major E. J. and Mrs. Cyril Lugard (Nos. 44 ; 258 ; 350).

Senecio Lugardae *Bullock*, sp. nov. [Compositae] ; a *S. Theodori* K. Afz. foliis basalibus longe petiolatis laminis oblanceolatis multo brevioribus, capitulis multo minoribus recedit.

Herba perennis, ramis floriferis paucifoliis erectis usque 45 cm. altis, striatis, puberulis. *Folia* basalia oblanceolata, apice rotundata, basi in petiolam usque 6 cm. longam gradatim angustata, marginibus repando-dentata ; lamina usque 6 cm. longa et 2 cm. lata, utraque pilis glandulosis puberula ; folia caulina minores, oblongo-oblanceolata, sessilia, basin versus angustata, subamplexicaulia, superiores lineares, multo reducta. *Inflorescentia* terminalis, paucicapitulata, cymosa ; pedunculi capitulorum glanduloso-puberuli, graciles, circiter 5-15 mm. longi, circa medium bracteo parvo lineare instructi. *Capitula* cylindrico-campanulata, circiter 9 mm. longa et 4 mm. diametro, homogama. *Bractee involucri* lineares, acutae, appendiculatae, 7 mm. longa et 1 mm. lata, extra glanduloso-puberula, margine hyalinae, appendicibus alabastro conniventibus sub anthesin reflexo-patentibus. *Flores* hermaphroditi, circiter 25 ; corolla 5.5 mm. longa ; antherae 2 mm. longae, basi caudatae. *Pappi setae* albae, sub anthesin 6 mm. longae. *Achenia* immatura leviter puberula.

KENYA COLONY. Mt. Elgon, 6700 ft., erect herb to 18 in., flowers buff, Feb. 1931, *Major E. J. and Mrs. Cyril Lugard* 541.

The writer is indebted to Dr. Mildbraed for the report "*Senecio prob. nov. spec.*, nicht in Herb. Berol."

Chironia elgonensis Bullock, sp. nov. [Gentianaceae]; *C. angolensi* Gilg affinis, sed floribus minoribus sanguineis numerosioribus, foliis brevioribus basi leviter amplexicaulibus haud angustatis facile distinguitur.

Herba elata, usque 1.2 m. alta, omnino glabra, laxe ramosa, caulibus quadrangularibus anguste alatis. *Folia* sessilia, lanceolata, apice subacuta, basi latissima leviter amplexicaulia, trinervia, superiores (sub inflorescentia) circiter 4 cm. longa et 1.3 cm. lata. *Inflorescentia* cymoso-paniculata, magna, laxa, floribus numerosissimis. *Calyx* 5 mm. longus, fere ad basin lobatus, lobis anguste triangularibus acutis 4 mm. longis dorsaliter alato-carinatis. *Corolla* sanguinea, persistens, tubo calyce aequilongo, lobis suberectis lanceolatis acutis circiter 10 mm. longis et 4 mm. latis. *Filamenta* complanata, 1.5 mm. longa. *Antherae* oblongae, 5 mm. longae, basin versus dorsifixae, laete flavae, valde tortae, dense minutissimo-papilloso-punctulatae. *Ovarium* oblongo-ellipsoideum, 6 mm. longum, 3 mm. diametro, laxe minute flavido-punctulatum. *Stylus* persistens, circiter 5 mm. longus, stigmatibus oblongo 1 mm. longo brevissime piloso. *Capsula* ovario leviter longior, valvis 3 demum recurvis. *Semina* numerosa, minuta.

KENYA COLONY. Mt. Elgon, 6500–7500 ft., found only in one swamp, an erect herb up to 4 ft. high, with crimson flowers, Oct.–Nov. 1930, *Major E. J. Lugard* 21.

The writer is indebted to Dr. Mildbraed for examining this plant and comparing it with the material of the genus in the Berlin Herbarium. It is extremely interesting as a representative of an almost entirely southern genus.

Swertia Lugardae Bullock, sp. nov. [Gentianaceae]; *S. wojerata* N. E. Br. similis, sed foliis minoribus, sepalis brevioribus, corollae segmentis unilateraliter purpureo-vittatis differt.

Herba perennis, erecta, glabra, usque 15 cm. alta; caules simplices vel e basi ramosi. *Folia* pauca, decidua, trinervia, elliptico- vel oblongo-spathulata, inferiores usque 2 cm. longa et 0.75 cm. lata, vix petiolata, sed basin versus angustata. *Cymae* paniculatae, saepissime 3-florae, pedunculis (terminalibus et lateralibus) adscendentibus usque 2.5 cm. longis, pedicellis 1–2 cm. longis. *Calyx* persistens, fere ad basin 5-lobatus, sub anthesin circiter 3 mm. longus, statu fructifero usque 6 mm. longus, lobis oblongis vel oblongo-spathulatis sub anthesin 1 mm. latis marginibus saepe purpureo-lineatis. *Corolla* persistens, circiter 8 mm. longa, 5-lobata, lobis oblongis 3 mm. latis albis vel luteo-albis sed late purpureo-vittatis (vittis unilateralibus) intus basin versus binectariferis; nectaria basi longe caudata. *Filamenta* dorsiventraliter compressa, 3 mm. longa; antherae oblongae, 1.2 mm. longae, loculis dimidio inferiore liberis. *Ovarium* lanceolatum, 3 mm. longum, stigmatibus

2 sessilibus hemisphaericis 0.5 mm. diametro. *Capsula* lanceolata, usque 1 cm. longa. *Semina* parva, haud alata.

KENYA COLONY. Mt. Elgon, 11,800 ft., an erect rock plant up to 3 in. high, flowers white with purple stripes, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 409 (type). Aberdare Mts., Loreko, 8000 ft., by stream side, an erect herb up to 6 in. high, flowers yellowish, tinged with green and purple, 18 July 1931, *Napier* 1231.

The writer is indebted to Dr. Mildbraed for examining specimens of this species at Berlin, where it could not be matched. A member of the section *Binectariatae*, *S. Lugardae* is chiefly remarkable for the broad purple stripes on the backs of the corolla segments. These are unilaterally disposed, and owing to the contorted aestivation, are outside in the bud stage. There is thus a sharp contrast between the purple buds and the white or pale yellow open flowers, a character which at once distinguishes it from the Abyssinian *S. wojeratensis* N. E. Br., which has pink flowers.

Plumbago montis-Elgonis *Bullock*, sp. nov. [Plumbaginaceae] ; aspectu *P. amplexicaulis* Oliv., sed floribus roseo-purpureis minoribus, corollae tubo calyce vix excedente, auriculis foliorum minoribus differt.

Herba glabra vel glabrescens, statura ignota. *Folia* (saltem superiora) sessilia, elliptica vel obovata, apice obtusa vel subacuta, vix acuminata, basin versus gradatim angustata, basi amplexicaulauriculata, in exemplare viso usque 18 cm. longa et 8 cm. lata, glabra, marginibus integris vel leviter irregulariter crenatis vel basin versus praesertim undulatis. *Panicula* parce ramosa, ramis apicem versus dense stipitato-glandulosis. *Flores* roseo-purpurei, breviter pedicellati, ex axillis bracteolarum orti, bracteolis ovatis amplexicaulibus puberulis circiter 3 mm. longis. *Calyx* anguste tubulosus, sicco sulcatus, circiter 1 cm. longus, limbo minuto roseo, pilis glandulosis sparse ornatus, ceteroque leviter puberulus vel glabrescens. *Corolla* circiter 1.7 cm. longa, anguste tubulosa ; tubus supra calycem in limbo circiter 5 mm. longo gradatim incrassatus. *Fructus* non visi.

KENYA COLONY. Mt. Elgon, 6500 ft., in moist shady places, spikes very sticky, flowers magenta, 18 May 1931, *Mrs. Cyril Lugard* 657.

Although closely allied to the blue-flowered *P. amplexicaulis* Oliv., which was sent to Kew in 1875 by Lieut. Cameron from the district south of Lake Tanganyika, and has not since been collected, the present plant is easily distinguished by its magenta-coloured flowers ; the corolla-tube of *P. montis-Elgonis* is only slightly longer than the calyx, whereas in *P. amplexicaulis* the tube is at least twice as long as the calyx, and frequently attains an even greater length. The auricles at the leaf-base of Oliver's species are also much larger than in the present plant, though it is doubtful if such a character will prove constant when a large series of specimens becomes available.

Justicia striata (Klotzsch) Bullock, comb. nov. [Acanthaceae].—*Adhatoda striata* Klotzsch in Peters, Reise Mossamb. 216 (1861). *Justicia Melampyrum* S. Moore in Trans. Linn. Soc. ser. 2, Bot. iv. 32 (1894); C. B. Clarke in Dyer, Fl. Trop. Afr. v. 199 (1900).

The name *J. Melampyrum* was evidently maintained by C. B. Clarke in accordance with the old Kew rule, but the International Rules require the above name-change. The plant is an erect herb 1 ft. high with axillary cymes of pink flowers, occurring in Kenya Colony, Uganda westwards to Ruwenzori, and southwards to Nyasaland, and westwards through Rhodesia to Angola. Major Lugard collected it (No. 242) on Mt. Elgon at 7000 ft.

Calamintha elgonensis Bullock, sp. nov. [Labiatae]; inter species africanas floribus multo majoribus valde distincta; a *C. simensi* Benth. foliis densius pilosis, habitu majore suffruticoso, floribus multo majoribus differt.

Herba suffruticosa, ramosa, aromatica, usque 1 m. alta, omnibus partibus pilis albis longe molliterque dense pubescens, ramis novellis quadrangularibus internodis circiter 1–2 cm. longis demum subteretibus et lignosis. *Folia* opposita, subsessilia, late ovata, apice obtusa, basi truncata vel subcordata, circiter 1.5 cm. longa et 1–1.2 cm. lata, superne marginibus crenatis, nervis lateralibus utrinque circiter 5, infra satis dense glanduloso-punctata. *Flores* caeruleo-rubri, in cymas 2–10-floras axillares dispositi; pedunculi usque 1 mm. longi, pedicellis gracilibus circiter 5 mm. longis. *Calyx* cylindricus, 12–14-costatus, extra longe pilosus et aurantiaco-glandulosus, leviter bilabiatus, tubo circiter 7 mm. longo, intus infra faucem pilis longis erectis annulato, labio superiore 3-dentato, inferiore 2-dentato, dentibus triangularibus acutissimis 1–1.5 mm. longis. *Corolla* obliqua, obscure bilabiata, 1.8 cm. longa, extra pilis longis albis vestita, tubo inferne anguste cylindrico superne (parte e calyce exserto) valde ampliato, labio superiore 6 mm. longo 3-lobato, lobis subaequalibus ambitu rotundatis obtusis 3–3.5 mm. diametro, labio inferiore elliptico-rotundato 6 mm. diametro, apice 2-fido. *Stamina* 4; filamenta complanata, 7.5 mm. longa; antherae parvae, 2-locellatae. *Stylus* 1.2 cm. longus, stigmatibus lineari 1 mm. longo. *Nuculae* brunneae, ellipsoideae, 1.25 mm. longae, 1 mm. latae.

KENYA COLONY. Mt. Elgon, 12,000 ft., aromatic, erect to 3 ft., flowers mauve, Dec. 1930, Major E. J. and Mrs. Cyril Lugard 364 (type).

UGANDA PROTECTORATE. Mt. Elgon, above Butandiga Camp, 11,000–12,000 ft., April 1930, Liebenberg 1660.

This species is remarkable among its African congeners for its large flowers; otherwise it is closely allied to *C. simensis* Benth. which also occurs on Mt. Elgon (Snowden 435; Lugard 40) at from 8000–10,000 ft. It is, however, more densely hairy, and of somewhat woody habit.

Leucas (§ *Astrodon*) *tricrenata* Bullock, sp. nov. [Labiatae]; *L. masaiensi* Baker affinis, sed foliis oblongis apice 3- (raro 4-) crenatis, bracteis lineari-subulatis longe setaceo-pilosis haud subfoliaceis, calyce dimidio inferiore subglabro differt.

Herba perennis, ramis ascendentibus leviter pilosis. *Folia* brevissime petiolata, oblonga, apice ambitu rotundata vel truncata, crenis 3 (raro 4) praedita, basi breviter cuneata, 8-14 mm. longa et 4-7 mm. lata, utraque pilis longis vestita et ciliata, infra dense glanduloso-punctata. *Flores* albi, numerosi, in verticillastras densas axillares 1-3 dispositi; bractae lineari-subulatae, usque 5 mm. longae, setaceo-pilosae. *Calyx* infundibuliformis, sub anthesin 6 mm. longus, circiter 6-8 dentatus et costatus, dentibus brevibus acutis, extra superne pilosus, inferne subglaber, intus glaber, statu fructifero paullo major, superne transverse rugoso-venosus. *Corolla* 1.2 cm. longa, bilabiata, labio superiore extra dense albido-villoso bifido, inferiore extra leviter piloso trifido, tubo intus circa medium pilis brevibus densis patentibus incomplete annulato.

KENYA COLONY. Mt. Elgon, 8600 ft., spreading herb to 12 in. high, flowers white, Jan. 1931, *Major E. J. and Mrs Cyril Lugard 471* (type). Nandi Forest, 7000 ft., herb about 6 in., flowers white, *Sir Harry Johnston s.n.*

***Aloe elgonica* Bullock**, sp. nov. [Liliaceae]; ab *A. Hildebrandtii* Baker foliis crassioribus dentibus majoribus, pedicellis congestioribus longioribus, floribus multo majoribus recedit.

Habitus erectus, usque 1.3 m. altus (teste collectore). *Folia* crassa, succulenta, elongato-triangularia, acuta, 20 cm. longa, sed matura probabiliter longiora, marginibus regulariter pungente dentata, dentibus triangularibus 7 mm. longis basi usque 1 cm. latis. *Inflorescentia* paniculata, glabra; rami dense floriferi, racemiformes; bractae scariosae, patentiae, ovatae, apice subulato-acuminatae, 1 cm. longae et 2.5 mm. latae; pedicelli persistentes, arcuato-patentes, 2.5 cm. longi et satis crassi. *Perianthium* aurantiacominiatum, persistens, anguste cylindricum, 4 cm. longum, 3.5 mm. diametro, 6-nervium, nervis latis, lobis anguste oblongis obtusis 5 mm. longis basi 2 mm. latis apicem versus ad 1 mm. latis angustatis. *Filamenta* gracilia, perianthi aequantia; antherae oblongae 4 mm. longae, basin versus dorsifixae, minutissime papillato-pustulatae. *Ovarium* ambitu anguste ovatum, apice obtusum, circiter 6 mm. longum; stylus circiter 3.4 cm. longus, stigmatibus minute bilobis. *Capsula* coriacea, extra rugoso-reticulata, intus nitida, 3-valvata, ambitu anguste elliptica, apice basique obtusa, usque 1.5 cm. longa et 6 mm. diametro. *Semina* nigro-grisea, membranaceo-alata, 6 mm. longa.

KENYA COLONY. Mt. Elgon, 6500-7500 ft., erect to 4 ft., flowers orange-scarlet, Dec. 1930, *Major E. J. Lugard 299*.

***Chlorophytum elgonense* Bullock**, sp. nov. [Liliaceae]; a *C. blepharophyllo* Schweinf. omnibus partibus minoribus, floribus bracteis haud excedentibus recedit.

Herba parva, usque 2 dm. alta, glabra. *Folia* membranacea, circiter 10–12, oblongo-lanceolata, gradatim acutissima, usque 18 cm. longa et 2 cm. lata, nervis parallelis circiter 18–20 distinctis, nervis transversis distantis indistinctis. *Inflorescentiae* solitariae vel paucae, simplices, foliis paullo superantes, bracteis membranaceis anguste lanceolatis subulato-acuminatis inferioribus usque 2 cm. longis saepe minutissime ciliatis. *Flores* ex axillis bractearum 2–3 fasciculati, albi, pedicellis usque 3 mm. longis. *Perianthium* bracteas haud excedens, circiter 4.5 mm. longum, segmentis oblongis obtusis vix 1 mm. latis. *Filamenta* filiformia, 1.5 mm. longa. *Antherae* oblongae, 2 mm. longae. *Ovarium* ovoideum, 1 mm. longum. *Capsula* ambitu oblonga, profunde sulcata, anguste alata, circiter 7 mm. longa et 5 mm. diametro.

KENYA COLONY. Mt. Elgon, 6500 ft., rhizomatous herb up to 8 in. high, with white flowers, 16 April 1931, *Major E. J. and Mrs. Cyril Lugard* 629.

Drimia congesta *Bullock*, sp. nov. [Liliaceae]; *D. robustae* Baker affinis, floribus congestioribus majoribus, pedicellis brevioribus crassioribus differt.

Herba bulbosa; bulbus sicut folia ignota. *Pedunculus* sulcatus, usque 1 m. altus, floribus ad apicem in racemum spiciformem circiter 15 cm. longum congestis. *Pedicelli* erecti, satis crassi, circiter 4 mm. longi, sed inferiores usque 6 mm. longi. *Bracteae* scariosae, inferne 2 cm. longae, 3.5 mm. latae, dorsaliter roseo-purpureo-vittatae, lanceolatae, apice acute acuminatae, cucullo dorso 2.5 mm. longo praeditae. *Perianthium* luteo-album, segmentis dorsaliter roseo-purpureo-vittatis linearibus 1.5 cm. longis apice subpatulo-cucullatis, tubo 4 mm. longo. *Filamenta* filiformia, fauce inserta, circiter 1.3 cm. longa. *Antherae* oblongae, dorsifixae, 1.5 mm. longae, purpureae. *Ovarium* oblongum, 5 mm. longum; stylus fere 1 cm. longus, basin versus articulatus. *Capsula* oblongo-obovoidea, sulcata, usque 1 cm. longa. *Semina* triangulari-compressa, nigra, oblonga, fere 4 mm. longa.

KENYA COLONY. Mt. Elgon, 8700 ft., a bulbous herb up to 3 ft. high, flowers cream with mauve lines, 6 Jan. 1931, *Major E. J. and Mrs. Cyril Lugard* 474.

Drimia elgonica *Bullock*, sp. nov. [Liliaceae]; a *D. zombensi* Baker omnibus partibus multo majoribus recedit.

Herba erecta, bulbosa; bulbus sicut folia ignota. *Pedunculus* 3.5–9 dm. alta, floribus ad apicem in racemum sublaxum usque 20 cm. longum dispositis. *Pedicelli* patentes vel adscendentes, circiter 5–10 mm. longi. *Bracteae* scariosae, circiter 1 cm. longae et 2 mm. latae, anguste lanceolatae, acute acuminatae, cucullo dorso parvo praeditae, dorsaliter roseo-vittatae. *Perianthium* griseo-album, fauce saturate rubro-vittatum, segmentis linearibus 1.2 cm. longis apice subpatulo-cucullatis, tubo cylindrico 5 mm. longo. *Filamenta* filiformia, fauce inserta, 1 cm. longa. *Antherae* oblongae,

2 mm. longae, dorsifixae. *Ovarium* ovoideum, 4 mm. longum; stylus 1 cm. longus, basi articulatus. *Capsula* matura non visa, ut videtur globosa.

KENYA COLONY. Mt. Elgon, 6900 ft., erect bulbous herb to 3 ft., flowers appearing before the leaves, dirty white with maroon throat, 15 March, 1931, *Major E. J. and Mrs. Cyril Lugard* 563 (type); 6,700 ft., bulbous herb 15 in. high with dirty white flowers, 4 March, 1931, *Major E. J. and Mrs. Cyril Lugard* 569.

Urginea porphyrantha *Bullock*, sp. nov. [Liliaceae]; ab *U. altissima* Baker omnibus partibus multo minoribus recedit.

Herba parva usque 1.5 dm. alta. *Folia* novella oblongo-lanceolata vel lanceolata, apice acuta, basin versus in vaginam sensim angustata, 10 cm. longa, 1.5 cm. lata, glabra, marginibus membranaceo-hyalinis. *Pedunculi* usque 10 cm. longi; racemi laxiflori 10 cm. longi; bractee lanceolato-subulatae, 2 mm. longae; pedicelli patentes, graciles, 1.5–2 cm. longi. *Perianthium* saturate rubro-purpureum, 6.5 mm. longum, segmentis uninervis oblongo-ellipticis obtusis 2 mm. latis. *Filamenta* complanata, 3 mm. longa. *Antherae* oblongae, 1 mm. longae. *Ovarium* ovoideum, 2 mm. longum. *Stylus* 2 mm. longus. *Capsula* non visa.

KENYA COLONY. Mt. Elgon, 6500 ft., bulbous herb, erect to 6 in., flowers maroon, 16 March, 1931, *Major E. J. and Mrs. Cyril Lugard* 556.

Crinum heterostylum *Bullock*, sp. nov. [Amaryllidaceae], inter species africanas heterostyla, filamentis brevibus, antheris fere basifixis rectis (nec arcuatis), distinctissima.

Bulbus membranaceo-tunicatus, ovatus, circiter 6 cm. diametro. *Folia* circiter 6, disticha, liguliformia, apice rotundata usque sub-acuta, 10–20 cm. longa, 1.5–2 cm. lata, leviter carnosa, marginibus minutissime scabridis. *Pedunculus* lateralis, 10–15 cm. longus, 7.5 mm. latus et circiter 2.5 mm. crassus, spathae valvis triangularibus membranaceis circiter 3.5 cm. longis basi 1 cm. latis, bracteis linearibus 2–3 cm. longis. *Perianthium* album demum roseum, vel lobis roseo-carinatis, circiter 10 cm. longum, tubo anguste cylindrico usque 6 cm. longo et 2.5 mm. diametro, lobis lanceolatis acutis circiter 4 cm. longis et 1 cm. latis. *Stamina* 2-seriata; filamenta linearia, 5–7 mm. longa; antherae lineari-oblongae, 4.5 mm. longae, basin versus dorsifixae. *Stylus* inclusus, 4 cm. longus, vel leviter exsertus et 6.5 cm. longus, sed stamina nunquam excedens. *Bacca* circiter 1.5 cm. diametro.

UGANDA PROTECTORATE. Kabaroni, Mt. Elgon, 6000–7000 ft., in peaty soil on rocks, 6–12 in. high, bulbs large, flowers white inside with pale pink stripes, red outside, pedicels red, 12 April, 1927, *Snowden* 1055 (type).—Sabei name "Singotyo."

KENYA COLONY. Mt. Elgon, 6000–7000 ft., small plants growing in shallow soil on exposed rocky patches, flower-heads 9 in. high, flowers white inside, pink outside, Feb. 1930, *Gardner*

2276 ; 7700 ft., plants up to 6 in. high, with flat, ribbon-like leaves and flattened scapes, flowers cream, veined with pink or yellow, Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 421.

Bulbs of this plant, sent to Kew by Lady Muriel Jex-Blake from her garden, flowered towards the end of July, 1931, and the above description, although taken from the herbarium material cited, is in exact agreement with the living plant. It is not, however, so successful from a horticultural standpoint as are some other well-known species. The flowers are at first pure white, then the keels of the perianth-lobes begin to turn pink, the colour spreading and gaining strength first outside then inside, until the whole flower is almost uniformly pink. In fairly bright sunlight, the colour change was complete at Kew in about 48 hours. The strap-shaped leaves become very flaccid at the time of flowering and, although quite glabrous, are almost silky to the touch.

Commelina elgonensis *Bullock*, sp. nov. [Commelinaceae] ; inter species africanas floribus azureo-purpureis majoribus longe pedicellatis valde distincta.

Herba erecta, usque 1·5 dm. alta, glabra vel satis dense pilis albidis longiusculis vestita. *Folia* lanceolata vel ovato-lanceolata, apice subacuta, basi in vaginam brevem vel usque 1 cm. longam leviter angustata, usque 6 cm. longa et 1·7 cm. lata, utrinque glabra usque satis dense albido-pilosa. *Spathae* solitariae, multiflorae, pedunculo usque 4·5 cm. longo sed saepe brevior, usque 2·5 cm. longae, acute acuminatae. *Flos* solitarius longissime pedicellatus, pedicello usque 2·5 cm. longo, ceteris floribus ad apicem pedunculi fere 1 cm. longi in cymis scorpioides ortis, pedicellis usque 1 cm. longis. *Petalum* ventralum major ; lamina suborbicularis, usque 1 cm. diametro. *Capsula* non visa.

KENYA COLONY. Mt. Elgon, 6700 ft., appearing after grass fires, an erect herb to 6 in. high with bluish-mauve flowers, 4 March 1931, *Major E. J. and Mrs. Cyril Lugard* 549.

Commelina Lugardii *Bullock*, sp. nov. [Commelinaceae] ; aspectu *C. subulatae* Roth sed foliis brevioribus, spathis densius pubescentibus differt.

Herba repens, pubescens, caulibus repentibus sulcato-striatis, internodiis circiter 6 cm. longis, floriferis subsimplicibus erectis circiter 6–10 cm. longis. *Folia* lineari-subulata, usque 3·5 cm. longa, parce pilosa vel subglabra, marginibus incurvis ; vaginae satis dense longe pilosae, 5–10 mm. longae. *Spathae* solitariae, subterminales, 2–3-florae, extra pilis longis purpureis vel albis dense indutae et ciliatae, purpureae vel purpureo-nervosae, marginibus haud connatis, ambitu inaequilateraliter ovatae, acutae, usque 1 cm. longae. *Flores* pallide aurantiaci, ceterum ut in *C. subulatae* Roth apparentes.

KENYA COLONY. Mt. Elgon, 8000 ft., a trailing herb with buff-orange flowers, Oct.–Nov. 1930, *Major E. J. Lugard* 145.

Eriocaulon Friesiorum *Bullock*, sp. nov. [Eriocaulonaceae]; *E. Schimperii* Koernicke ex Engl. affinis, foliis angustioribus apice subacute angustatis, bracteis involucri nigris vel brunneo-nigris majoribus haud demum reflexis differt.

Herba robusta, acaulescens. *Folia* numerosa, late linearia, plana, 5–15 cm. longa, circiter medium 7–9 mm. lata, glabra, apicem versus subacute angustata. *Pedunculi* 2–4, circiter 7-sulcati, 5–25 cm. longi, 1.5 mm. diametro; vaginae usque 7 cm. longae, apice limbo 2-lobato ornatae, lobis 2 cm. longis triangularibus acutis. *Capitula* 1–1.5 cm. diametro, semi-globosa, monoica, receptaculo glabro. *Involucri bracteae* nigrae vel brunneo-nigrae, 2–3-seriatae, ovatae vel ellipticae, vel interiores apicem versus ovato-spathulatae, circiter 3 mm. longae et 1.5 mm. latae, interdum extra apicem versus albido-pilosae; bracteae floriferae nigrae, oblongo-spathulatae, 3.5 mm. longae et 1.5 mm. latae, apicem versus dense albido ciliatae et pilosae, apice acutae. *Flores foeminei* subsessiles, sepalis late ellipticis vel ovatis 3 mm. longis et 1.5 mm. latis acutis saturate nigro-viridibus apicem versus pilis albidis barbatis, petalis lineariblancheolatis vel spathulatis 2.5 mm. longis et 0.5 mm. latis apicem versus glandulo nigro ornatis et albido-pilosis. *Flores masculi* similes, sed petalis in tubum coalitis. *Stamina* 2–4, exserta; antherae globosae, nigrae. *Fructus* non visi.

KENYA COLONY. Aberdare Mts., in swamp in the upper bamboo zone, about 10,000 ft., 17 March 1922, *R. E. and Th. C. E. Fries* 2402 (type); in moorland glades in the bamboo zone above 8000 ft., *Gardner* 1159. Mt. Elgon, 10,200 ft., Feb. 1932, *Mrs. Cyril Lugard* 673.

ORCHIDACEAE (V. S. Summerhayes).

Holothrix (§Scopularia) elgonensis *Summerhayes*, sp. nov.; affinis *H. pleistodactylae* Kraenzl. a qua planta robustiore, floribus fere duplo majoribus, labello supra calcar vix gibboso, calcari pro rata crassiore differt.

Herba terrestris, 27–39 cm. alta; tuber ellipsoideum, 1.5 cm. longum. *Folia* bina, saepius radicalia, humistrata, carnosae, inferius orbiculare, 2–4 cm. longum, 3–5.5 cm. latum, superius multo minus, ovatum, 1.5–3 cm. longum, 1–2 cm. latum, fere glabra, densiuscule ciliata. *Scapus* strictus, dense retrorseque pubescens. *Spica* secunda, dense multiflora, 4–9 cm. longa, rhachi sparsiuscule pubescente, bracteis ovatis acutis vel acuminatis densiuscule pilosis 2.5–10 mm. longis. *Flores* patentes, albidii, interdum roseo- vel pallide purpureo-tincti. *Sepalum* intermedium anguste ovatum, acutum, breviter acuminatum, 4 mm. longum, 2 mm. latum; sepala lateralia ovata, acuta vel acuminata, basi margine anteriore cordata, 5 mm. longa, 2.5–3 mm. lata; omnia sepala uninervia, extra longiuscule pilosa. *Petala* obcuneata, triente superiore 4–6-partita, partitionibus linearibus, in toto 8 mm. longa, 2 mm. lata, glabra. *Labellum* anguste flabellatum, triente superiore 13-partitum,

partitionibus linearibus, in toto 9 mm. longum, partitionibus exclusis 4.5 mm. latum, glabrum, inferne columnam subamplectens; calcar subconicum vel late cylindricum, leviter curvatum, obtusum, 2.5–3 mm. longum. *Columna* brevissima, obtusa, 1.5 mm. longa. *Ovarium* 2.5 mm. longum, pubescens.

KENYA COLONY. Mt. Elgon, 10,200 ft., Dec. 1930, *Major E. J. and Mrs. Cyril Lugard* 379; 10,500 ft., Jan. 6th, 1931, *Major E. J. and Mrs. Cyril Lugard* 379a (type).

This species is closely allied to *H. pleistodactyla* Kraenzl., recorded from Kilimanjaro, but differs in being much larger in all its parts except the column. It may prove later to be only a large form of Kraenzlin's species but the differences are so great as to make specific segregation advisable until more is known of this group. The genus *Holothrix* requires careful collecting in as many places as possible since the relation of many of the described species to one another remains very obscure.

Platycoryne montis-Elgon (Schltr.) Summerhayes, comb. nov.—*Habenaria montis-Elgon* Schltr. in Notizbl. Bot.-Gart. Berl. viii. 225 (1922).

Satyrrium (§ Chlorocorys) dizygoceras Summerhayes, sp. nov.; forsan *S. leptopetalo* Kraenzl. affine, a quo ovario papilloso, sepalis et petalis papillato-pubescentibus, calcaribus secundariis 0.5 mm. longis additis, rostellum lobo intermedio producto apice triangulari differt.

Herba terrestris usque 50 cm. alta. *Folia* non visa. *Scapus* erectus, teres, cataphyllis lanceolatis vel ellipticis acutis vel acuminatis vaginantibus fere omnino obtectus. *Spica* cylindrica, usque 22 cm. longa, circiter 2.5 cm. diametro, subaxe multiflora; bracteae sub anthesi reflexae, lanceolatae, acuminatae, usque 2.5 cm. longae, floribus longiores. *Flores* suberecti vel erecto-patentes, virides, ovario papillato 7–10 mm. longo. *Sepala* cum petalis per 3–3.5 mm. connata; sepalum intermedium pars libera obovato-cuneata, obtusa, 2.2 mm. longa, 0.75–1 mm. lata, papillato-puberula; lateralium pars libera semilunata, acuta, 2.5–3 mm. longa, 1.5–1.6 mm. lata, fere glabra. *Petalorum* pars libera cuneato-obovata, obtusa, 1.8–2 mm. longa, 0.6–0.7 mm. lata, dense papillato-pubescentia et ciliolata. *Labellum* ellipsoideo-globosum, lateraliter compressum, basi sepalis lateralibus per 2 mm. longum connatum, 6–6.5 mm. longum, ostio angusto marginibus recurvulis, apice recurvatum, denticulatum, papillosum; calcaria 4, 2 posteriora cylindrica, dependentia, tenuia, circiter 2 cm. longa, 2 anteriora sacciformia, obtusa, 0.5 mm. longa. *Columna* leviter incurvata, 3 mm. longa; labium stigmatiferum fere orbiculare, 2 mm. diametro; rostellum 2.5 mm. longum, basi 1.5 mm. latum, trilobum, lobis lateralibus dentiformibus, lobo intermedio ex ungue leviter curvato deltoideo obtuso basi ± truncato.

KENYA COLONY. Mt. Elgon, about 7000 ft., April 1931, *Major E. J. and Mrs. Cyril Lugard* 595.

This is yet another species in sect. *Chlorocorys* with an additional very short spur in front of each of the normal long spurs. From *S. sacculatum* Rolfe it is distinguished by the smaller flowers and much longer spurs; *S. shirens* Rolfe differs, *inter alia*, in having radical leaves at the base of the flowering stem whereas in *S. dizygoceras* they are apparently on separate sterile shoots. In general characters the species seems to approach nearest to *S. leptopetalum* Kraenzl. from which it may be distinguished by the characters given in the diagnosis.

Eulophia montis-Elgonis *Summerhayes*, sp. nov.; *E. abyssinicae* Rchb. f. et *E. dichromae* Rolfe proxima, ab utraque florum colore, labelli lobo intermedio obovato-oblongo obtuso, ab illa labelli lobo intermedio nervis breviter barbatis praedito, ab hac floribus duplo minoribus differt.

Herba terrestris usque 1 m. alta, basi non visa. *Folia* inferiora in vaginas \pm foliatis redacta, superiora anguste lanceolata, verosimiliter acuta, utroque angustata, basi in petiolum falsum producta, sub anthesi in toto 60 cm. longa, medio 2.5-3 cm. lata. *Scapus* teres, cataphyllis paucis acutis longe amplexantibus fere omnino obtectus. *Racemus* cylindricus, 8-12 cm. longus, 4-5 cm. diametro, inferne laxiuscule, superne dense, usque 25-florus; bracteae linearilanceolatae vel lineares, aristatae, usque 3.5 cm. longae. *Flores* rosaceo-lilacini, subnutantes, pedicellis cum ovario suberectis 2-2.5 cm. longis gracilibus. *Sepalum* intermedium lanceolato-ovatum, 18 mm. longum, 8-9 mm. latum; sepala lateralia oblique oblongo-ovata, apiculata, 18 mm. longa, 10 mm. lata. *Petala* oblique oblongo-lanceolata, apiculata, 13 mm. longa, 6 mm. lata. *Labellum* e basi cuneata trilobatum, 14-15 mm. longum, 11 mm. latum; lobus intermedius obovato-oblongus, rotundatus, 7 mm. longus, 5.5 mm. latus, inferne venis barbatis; lobi laterales leviter divergentes, oblique oblongi, obtusi, 4 mm. longi; discus carinis duabus rectis parallelis secus jugum acute canaliculatis antice subito truncatis et vena incrassata inter carinas instructus; calcar anguste cylindricum, obtusum, 3 mm. longum. *Columna* leviter incurvata, antice excavata, 6 mm. longa, pede 2 mm. longo.

KENYA COLONY. Mt. Elgon, May-June 1931, *Major E. J. and Mrs. Cyril Lugard* 663.

A striking species with relatively broad leaves appearing with the flowers, a rather short raceme of pinkish-mauve flowers and a narrow cylindrical spur. It is most closely related to the species mentioned in the diagnosis.

Aerangis floribunda (Rolfe) *Summerhayes*, comb. nov. *Listrostachys floribunda* Rolfe in Kew Bull. 1918, 236.

LXVIII.—NOTES ON THE FLORA OF SOUTHERN AFRICA :

III. MISCELLANEOUS NEW SPECIES. J. HUTCHINSON.

Amellus capensis Hutch. comb. nov. [Compositae].—*Haenelia capensis* Walp. Rep. ii. 974 (1843). *Kraussia capensis* Sch. Bip. in Flora, xxvii. 672 (1844). *Amellus Lychnitis* var. *flosculosus* Benth. ex Harv. in Harv. & Sond. Fl. Cap. iii. 62 (1864).

Caules ascendentes, arcuati, usque ad 30 cm. alti, obtuse costati, adpresse pubescentes, dense foliati. *Folia* inferiora opposita, late linearia, basi semiamplexicaulia, apice rotundata, 4–5 cm. longa, 6–7 mm. lata, 1-nervia, utrinque brevissime pubescentia. *Capitula* solitaria, discoidea, longe pedunculata, magna, circiter 2 cm. diametro; pedunculi paucibracteati, bracteis subfoliaceis. *Involucrum bracteae* circiter 5-seriatae, numerosissimae, ab exteriori gradatim longiores, exteriores oblongo-oblancheolatae, apice triangulari-acutae, interiores lineari-oblongae, circiter 1 cm. longae, extra adpresse pubescentes. *Receptaculi* paleae lineari-oblancheolatae, membranaceae, supra medium serrato-ciliatae. *Flores* omnes disciformes, flavi. *Achaenia* complanata, superne setulosa, pappo coroniformi brevissimo serrato coronata.

SOUTH AFRICA. Cape Div.: near Cape of Good Hope, Cape Peninsula, *Pillans* 4120. Swellendam Div.: sandy soil near Klein River mouth, Dec., *Krauss* 575 (type).

This is so distinct from *A. Lychnitis* Linn., that it is surprising that Harvey, who had a critical eye, did not keep them specifically distinct. Besides there being ray-flowers present in *A. Lychnitis*, the pappus and paleae of the receptacle are quite different, whilst the involucre bracts are equally distinct.

Corymbium Fourcadei Hutch. sp. nov. [Compositae], affinis *C. scabro* Linn. f., sed foliis obscurissime 3-nervis pustulato-punctatis, bracteolis ultimis minoribus differt.

Caulis usque ad 30 cm. longus, scabrido-puberulus, basi dense villosus, foliorum delapsorum basibus persistentibus indutus. *Folia* radicalia pauca, erecta, late linearia, rigide subacuta, 8–12 cm. longa, 6–10 mm. lata, glabra sed minutissime pustulato-punctulata, obscure 3-nervia, marginibus cartilagineis et stramineis; folia caulina pauca, lanceolata, 1–3 cm. longa, pustulato-puberula. *Corymbi* circiter 4 cm. diametro; rami scabrido-puberuli, bracteis paucis subfoliaceis ovato-lanceolatis, bracteolis ultimis subulatis brevibus; pedunculi ultimi brevissimi. *Capitula* uniflora; bracteae 2, imbricatae, oblancheolatae, apice obtusae vel subtruncatae, purpureo tinctae, 8 mm. longae, extra scabrido-pubescentes. *Flos* breviter stipitatus. *Achaenia* dense villosa, pappo breviter cupulari margine inciso coronata. *Corollae* tubus 2 mm. longus, lobis late lanceolatis 5 mm. longis. *Antherae* 2.5 mm. longae. *Styli* rami 3 mm. longi.

SOUTH AFRICA. Uniondale Div.: Blaauw Bosch Pass, north side, 2200 ft., Nov. 1923, flowers light purple, *Fourcade* 2849 (type). Blaauw Bosch Berg, 5000 ft., Dec. 1925, *Fourcade* 3153.

Disparago rosea Hutch. sp. nov. [Compositae], foliis spiraliter tortis, capitulis glomeratis vel solitariis 5-8-floris, floribus radii papposis distincta.

Fruticulus intricato-ramosus, usque ad 25 cm. altus; ramuli numerosi, dense foliati, adpresse pubescentes. *Folia* alterna, spiraliter torta, 2-3 mm. longa, subacicularia, mucronata, supra demum glabra, infra adpresse lanata. *Capitula* solitaria vel glomerata, sessilia, radiata. *Involucrum* cylindricum, 4-5 mm. longum; bracteae brunneae, circiter 4-seriatae, glabrae, exterioribus ovato-lanceolatis subobtusis leviter carinatis interioribus oblongis circiter 5 mm. longis basin versus subhyalinis. *Flores radii* plerumque 2-3, rosei; corollae tubus anguste cylindricus, limbo elliptico apice irregulariter 2-3-dentato; achaenia glabra; pappi setae circiter 12, basi connatae, superne plumosae. *Flores disci* 3-5, purpurei; achaenia et pappi setae ut in floribus radii.

SOUTH AFRICA. Uniondale Div.; hills near Avontuur, 2800 ft., Oct., *Fourcade* 1663.

This beautiful little plant is clearly related to a species described by Bolus as *Amphiglossa Kolbei*. Both species have a pappus which is plumose in the upper half, a character belonging to *Disparago* and not to *Amphiglossa*, wherein the pappus bristles are markedly plumose right to the base. In general habit also these two species most resemble *Disparago* in that the flower-heads tend to become clustered at the ends of the shoots. They might be regarded as rather primitive species because some of the heads are solitary and the achenes of both sexes are provided with a pappus. Following this view it is necessary to transfer Bolus' species as **Disparago Kolbei** Hutch., comb. nov.

Scilla violacea Hutch. sp. nov. [Liliaceae], inter species austro-africanas caulibus bene evolutis, foliis lanceolatis infra purpurascenscentibus et nitidis supra cinereis viridi irregulariter notatis, filamentis violaceis distincta.

Caules usque ad 8 cm. longi, rubro-purpurei, glabri, 3-5-foliati. *Folia* lanceolata vel oblongo-lanceolata, basi longe vaginata, apice submucronata, 7-10 cm. longa, 2-2.3 cm. lata, tenuiter carnosa, glabra, supra cinerea, viridi irregulariter notata, infra purpurea et nitida. *Racemi* axillares et terminales, suberecti; pedunculi circiter 10 cm. longi, fusco-virides, 2 mm. crassi, circiter 20-flori; pedicelli nutantes, albi, superne violaceo tincti, 8 mm. longi. *Perianthii* segmenta 2-seriata, oblonga, obtusa, 3.5-4 mm. longa, 2 mm. lata, viridia, marginem versus pallidiora. *Stamina* segmentis aequilonga; filamenta inferne pallida, superne intense violacea; antherae flavae. *Ovarium* depresso-globosum, viride, profunde 6-lobatum, glabrum, 2.5 mm. diametro; stylus 3 mm. longus, pallidus, apice violaceo tinctus.

SOUTH AFRICA. Uitenhage Div.: Klein River, near Hankey; cultivated at Kew from bulbs collected by J. Hutchinson and F. R. Long in September 1930.

Encephalartos kosiensis *Hutch.* sp. nov. [Cycadaceae], acaulis, foliolis confertis et leviter imbricatis lobo terminali haud conspicuo valde distincta.

Planta acaulis vel fere acaulis. *Folia* probabiliter circiter 1 m. longa; rachis supra anguste canaliculata, glabra; foliola circiter 20-juga? conferta et leviter imbricata, oblongo-elliptica, sessilia, basi latissima et utrinque plus minusve rotundata, apice 3-5-lobata, lobis late triangularibus pungentibus, marginibus dentibus 2-4 lateralibus minoribus armatis, 8-15 cm. longa, 3-5 cm. lata, nervis parallelis satis tenuibus circiter 25. *Strobili* non visi.

SOUTH AFRICA. Zululand: behind sand-dune bush near Kosi Lake, East Ingwavuma district, *Aitken & Gale* 63. Kosi Bay, *Col. Lugge* in *Natal Herb.* 16507. Cultivated by *Col. G. Molyneux* at the "Old Fort," Durban, July 1930.

I have seen only two leaves of this apparently distinct species, and further material, including a photograph, is very desirable for the Kew Herbarium. It is no doubt allied to *E. ferox* Bertol. from Mozambique, which I have not seen, but which is described as having a stem about $2\frac{1}{2}$ ft. high and 1 ft. in diameter, and narrower leaflets.

LXIX.—MISCELLANEOUS NOTES.

THE DIRECTOR has been elected an Honorary Fellow of King's College, Cambridge.

Principles of Soil Microbiology.—We regret that in the review of the second edition of this work, which appeared in *K.B.* 1932, 413, the increase in price over the first edition was commented on with surprise. This increase is, of course, due to the fall in value of the pound which has taken place since the first edition appeared, and which has increased the price of all American publications.



ROYAL BOTANIC GARDENS, KEW

BULLETIN OF MISCELLANEOUS INFORMATION

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